

Final Environmental Impact Report Comments and Responses

For the San Francisco Public Utilities Commission's LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT



San Francisco Planning Department Case No. 2006.0536E
State Clearinghouse No. 2007012002

Draft EIR Publication Date: March 2, 2010
Public Hearing Date: April 6, 2010, Hillsborough
Public Hearing Date: April 8, 2010, San Francisco
Public Comment Period: March 2, 2010 to April 16, 2010
Comments and Responses Publication Date: September 22, 2010
Final EIR Certification Date: October 7, 2010

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MEMO

DATE: September 22, 2010
TO: Members of the Planning Commission and Interested Parties
FROM: Bill Wycko, Environmental Review Officer
RE: Comments and Responses on Draft Environmental Impact Report for Case No. 2006.0536E, Lower Crystal Springs Dam Improvements Project

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Attached for your review please find a copy of the Comments and Responses document for the Draft Environmental Impact Report (EIR) for the above-referenced project. **This document, along with the Draft EIR, will be before the Planning Commission for Final EIR certification on October 7, 2010.** Please note that the public review period ended on April 16, 2010.

The Planning Commission does not conduct a hearing to receive comments on the Comments and Responses document, and no such hearing is required by the California Environmental Quality Act. Interested parties, however, may always write to Commission members or to the President of the Commission at 1650 Mission Street and express an opinion on the Comments and Responses document, or the Commission's decision to certify the completion of the Final EIR for this project.

Please note that if you receive the Comments and Responses document in addition to the Draft EIR, these two documents constitute the Final EIR. If you have any questions concerning the Comments and Responses document or the environmental review process, please contact **Erika Lovejoy** at (415) 575- 9026.

Thank you for your interest in this project and your consideration of this matter.

Attachment: Comments and Responses Document

Final Environmental Impact Report Comments and Responses

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PLANNING DEPARTMENT**

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CHAPTER 1

Introduction

1.1 Purpose of the Comments and Responses Document

This Comments and Responses document contains public comments received on the Draft Environmental Impact Report (EIR) for the San Francisco Public Utilities Commission's (SFPUC) proposed Lower Crystal Springs Dam Improvements (LCSDI) project (State Clearinghouse No. 2007012002), and responses to those comments. This document also includes text and figure changes initiated by the San Francisco Planning Department to clarify or correct content, as well as text and figure changes made in response to comments on the Draft EIR. In addition, this document provides updates relevant to the project that have occurred since publication of the LCSDI Draft EIR, and specifically, it presents the description and analysis of a variation of the proposed project analyzed in the Draft EIR, referred to as the LCSDI Variant.

1.2 Environmental Review Process

On March 2, 2010, the San Francisco Planning Department published the Draft EIR on the LCSDI project and distributed it for public review and comment. The public review and comment period for the document extended from March 2, 2010 to April 16, 2010. During the 45-day public review period, the San Francisco Planning Department received 19 sets of written comments¹ sent via mail, fax, or email (see **Appendix C&R A** for copies of all written comments received), and seven speakers presented verbal comments at the two public hearings on the Draft EIR. A court reporter was present at each of the public hearings, transcribed the verbal comments verbatim, and prepared written transcripts (see **Appendix C&R B** for the public hearing transcripts). Public hearings were held on the following dates and at the following locations:

- April 6, 2010 – Hillsborough Town Hall, Hillsborough, California
- April 7, 2010 – San Francisco City Hall, San Francisco Historic Preservation Commission, San Francisco, California²
- April 8, 2010 – San Francisco City Hall, Planning Commission Chambers, San Francisco, California

¹ This total includes letters received after the public review and comment period.

² No members of the public submitted oral comments. Verbal comments made by the San Francisco Historic Preservation Commission were summarized in a letter from the Commission; there is no transcript for this public hearing.

This document has been distributed to the San Francisco Planning Commission and State Clearinghouse, as well as to the agencies, organizations, and individuals who commented on the Draft EIR. This Comments and Responses document in combination with the Draft EIR, constitutes the Final EIR for the LCSDI project. The Planning Commission will review and consider the information presented in the Final EIR and decide at a public hearing scheduled for October 7, 2010 whether to certify that the Final EIR has been completed in compliance with the California Environmental Quality Act (CEQA). In the event the Planning Commission's certification decision is appealed, the San Francisco Board of Supervisors would hear and make a final determination on any appeal. Upon certification of the Final EIR, the SFPUC will review and consider the Final EIR prior to making a decision on project approval. If the SFPUC approves the proposed project, it will adopt environmental findings and a Mitigation Monitoring and Reporting Program (MMRP) at the project decision hearing. An MMRP is required by the CEQA Guidelines (Section 15097) and is designed to ensure that mitigation measures identified in the Final EIR to reduce or avoid the project's significant environmental effects are implemented.

1.3 Document Organization

The Draft EIR consists of Chapters 1 through 9 and Appendices A to M. This Comments and Responses document consists of Chapters C&R 1 through 5 and Appendices C&R A to C&R D. Together, the Draft EIR and the Comments and Responses document comprise the Final EIR on the SFPUC's LCSDI project.

Following this Chapter 1, Introduction, Chapter 2, List of Persons Commenting, contains a list of all agencies, organizations, and individuals that submitted written comments on the Draft EIR and who presented verbal comments at the public hearings on the Draft EIR.

Chapter 3, Project Variant, describes the LCSDI Variant and provides an evaluation of its environmental effects. The LCSDI Variant is identical to the proposed project as presented in the Draft EIR except it incorporates proposed revisions to the long-term operations of Lower Crystal Springs Dam and Crystal Springs Reservoir in order to implement a minimum water release schedule. The proposed minimum water release schedule was developed in response to permit negotiations with regulatory agencies for this project to enhance habitat for steelhead and other native species along San Mateo Creek downstream of Lower Crystal Springs Dam. Refinements to the LCSDI project that were submitted to regulatory agencies subsequent to publication of the Draft EIR are provided in **Appendix C&R C**. The proposed long-term operations plan for the LCSDI is provided in **Appendix C&R D**.

Chapter 4, Comments and Responses, presents verbatim excerpts of the substantive comments received on the Draft EIR, either verbally during the public hearings or in writing. Comments are grouped by environmental topic and generally correspond to the table of contents of the Draft EIR; in a few cases, related comments are grouped together and responded to in a comprehensive master response. Appendix C&R A presents copies of the written letters, emails, or faxes from which the comments are excerpted, and Appendix C&R B presents the transcripts of the verbal testimony received at the public hearings on the Draft EIR from which the verbal comments are

excerpted. Each comment letter or transcript is bracketed according to topic in the margin of each page, showing the topical comment identifier codes used in this document.

Following each comment or group of comments is the Planning Department's response. Similar comments are grouped together by topic and are addressed by a single, comprehensive response, and in some cases, the response refers the reader to a master response. The responses provide clarification of the Draft EIR text and may also include revisions or additions to the Draft EIR. Revisions to the Draft EIR are shown as indented text. New or revised text is double underlined; deleted material is shown in ~~strike-out~~.

Chapter 5, Draft EIR Revisions, contains changes made at the initiation of staff subsequent to publication of the Draft EIR to correct or clarify information as well as changes to the Draft EIR text made in response to comments. Chapter 5 also contains revisions to Draft EIR figures and tables.

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CHAPTER 2

List of Persons Commenting

The San Francisco Planning Department received comments on the Lower Crystal Springs Dam Improvements (LCSDI) project Draft Environmental Impact Report (EIR) from agencies, organizations, and individuals during the public comment period from March 2, 2010 to April 16, 2010. In addition to written comments, the Planning Department also received verbal comments at the public hearings on the Draft EIR held on April 6, 2010 at the Hillsborough Town Hall; before the San Francisco Historic Preservation Commission on April 7, 2010; and before the San Francisco Planning Commission on April 8, 2010. A complete list of commenters is provided below.

2.1 Written Comments

The following written comments were received during the Draft EIR comment period.

2.1.1 Agencies

Charles Armor, Regional Manager, California Department of Fish and Game (CDFG); letter, April 6, 2010.

Lisa Carboni, District Branch Chief, California Department of Transportation (Caltrans); letter, April 15, 2010.

Michael G. Waggoner, Field Engineering Branch Chief, California Department of Water Resources, Division of Safety of Dams (DSOD); letter, April 14, 2010.

William B. Hurley, P.E., Senior Engineer, San Francisco Bay Regional Water Quality Control Board (RWQCB); letter, March 26, 2010.

Nicole Sandkulla, P.E., Senior Water Resources Engineer, Bay Area Water Supply and Conservation Agency (BAWSCA); letter, April 16, 2010.

Cyrus Kianpour, P.E., P.L.S., City Engineer, Town of Hillsborough Department of Public Works; letter, April 14, 2010.

Anthony Ranii, Superintendent, Hillsborough City School District; letter, April 16, 2010.

Charles Edwin Chase, President, San Francisco Historic Preservation Commission; letter, April 9, 2010.

2.1.2 Organizations

Richard Izmirian, Member of the Board of Directors, California Sportfishing Protection Alliance; letter, April 16, 2010.

Drew Shell, San Mateo County Conservation Chair – Santa Clara Valley Chapter, California Native Plant Society (CNPS); email, April 16, 2010, and letter, April 16, 2010.

Corrine Winter, Executive Director, Silicon Valley Bicycle Coalition; letter, April 14, 2010.

2.1.3 Individuals

Joan Bardet; comment card, April 14, 2010.

Joshua Cooperman; email, April 16, 2010.

Tiffany Knight, Ph.D.; letter, April 16, 2010.

Steve Lawrence; email, March 4, 2010.

Darrell Michael; email, April 24, 2010.

M. Naughton; email, March 4, 2010.

Margot and Steve Pace; comment card, April 6, 2010.

2.2 Persons Commenting at the Public Hearing, April 6, 2010

The following individuals made verbal comments on the Draft EIR during the public hearing on April 6, 2010 at the Hillsborough Town Hall located at Floribunda Avenue in Hillsborough, California:

Richard Izmirian, California Sportfishing Protection Alliance
Fan Moberg
Stephen Pace
Josh Cooperman

2.3 Persons Commenting at the Public Hearing, April 7, 2010

The following individuals made verbal comments at the public hearing before the San Francisco Historic Preservation Commission at San Francisco City Hall on April 7, 2010:¹

Charles Edwin Chase, Historic Preservation Commission
Alan Martinez, Historic Preservation Commission
Courtney Damkroger, Historic Preservation Commission
Karl Hasz, Historic Preservation Commission

¹ No members of the public submitted oral comments. Verbal comments made by the San Francisco Historic Preservation Commission were summarized in a letter from the Commission; there is no transcript for this public hearing.

2.4 Persons Commenting at the Public Hearing, April 8, 2010

The following individuals made verbal comments on the Draft EIR during the public hearing before the San Francisco Planning Commission at San Francisco City Hall on April 8, 2010:

Commissioner Kathrin Moore
Commissioner Michael Antonini
Commissioner Hisashi Sugaya

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CHAPTER 3

Project Variant

3.1 Background

On July 16, 2010, subsequent to publication of the Draft EIR, the San Francisco Public Utilities Commission (SFPUC) submitted proposed refinements to the Lower Crystal Springs Dam Improvements (LCSDI) and Crystal Springs/San Andreas (CSSA) Transmission Upgrade projects to the U.S. Army Corps of Engineers as part of the formal consultation process with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG) for Endangered Species Act compliance for these projects (SFPUC, 2010b). This process has resulted in a proposed minimum water release schedule for San Mateo Creek downstream of Lower Crystal Springs Dam (LCSD) to enhance habitat for native fishes. The minimum water releases would modify the future operations of the LCSD and Crystal Springs Reservoir. Thus, in a memorandum dated July 29, 2010, the SFPUC has prepared proposed revisions to the LCSDI operations that incorporate the minimum water release schedule (SFPUC, 2010d). The July 16, 2010 submittal to the U.S. Army Corps of Engineers is provided in **Appendix C&R C** of this Comments and Responses document. The July 29, 2010 proposed revisions to the operations plan are included in **Appendix C&R D**. These two documents form the basis for the difference between the proposed project described in the Draft EIR and the LCSDI Variant. The LCSDI Variant is the SFPUC's preferred project.

This chapter provides a description of the LCSDI Variant and an evaluation of its environmental effects. The LCSDI Variant, as described in detail below, would be identical to the proposed project as described in the Draft EIR except that it includes a revised operations plan with a minimum water release schedule for San Mateo Creek below LCSD and a long-term monitoring plan to assess the effects of the releases on aquatic resources. The analysis of the variant specifically addresses the environmental effects of the proposed minimum water release schedule and the implications of the release schedule for SFPUC operations.

As described in the environmental analysis of the variant in Section 3.3 below, no significant new information has been added to the EIR. Consistent with California Environmental Quality Act (CEQA) Guidelines Section 15088.5, the environmental analysis of the LCSDI Variant presented below concludes that: (1) no new significant impacts would result from the variant and no new mitigation measures are proposed to be implemented relative to the information presented for the proposed project in the Draft EIR; (2) with implementation of mitigation measures identified in the Draft EIR as applicable to the variant, there is no substantial increase in the severity of an environmental impact under the variant; and (3) there are no additional alternatives or mitigation

measures different from those analyzed in the Draft EIR. Any necessary environmental analysis or verification in support of the LCSDI Variant is described in this document, and no new or modified mitigation measures from those presented in the Draft EIR would be required.

As a related action, the SFPUC has modified the description of the CSSA Transmission Upgrade project to include the same minimum water release schedule. The San Francisco Planning Department issued an Addendum to the CSSA Transmission Upgrade Final EIR (Planning Department Case No. 2007.1255E, certified on April 22, 2010) on September 1, 2010 that addresses these changes in the CSSA Transmission Upgrade project operations. As originally proposed and approved by the SFPUC, the CSSA Transmission Upgrade project includes construction and operation of a low-flow release system that would be used to release flows into lower San Mateo Creek below the LCSD. The proposed minimum water releases would be implemented through the low-flow release system that was approved as part of the CSSA Transmission Upgrade project, thereby modifying CSSA Transmission Upgrade project operations as well as LCSDI operations. Therefore, similar to the LCSDI Variant, the CSSA Transmission Upgrade Final EIR and Addendum (San Francisco Planning Department, 2010a and 2010b) analyzed the potential for environmental impacts from the minimum water releases through the CSSA low-flow release system. The analysis has been provided in the environmental documentation of both the LCSDI and CSSA Transmission Upgrade projects because the proposed minimum water release schedule potentially affects long-term SFPUC operations that factor into the CEQA analysis for both projects.

3.2 Description of LCSDI Variant

Under the LCSDI Variant, all facility components would be identical to those of the proposed project as described in the Draft EIR (Chapter 3, Section 3.5). The variant includes: improvements to the parapet wall and spillway; drainage improvements on the top of the dam; replacement of the stilling basin and installation of creek bank protection at the toe of the dam; and raising Sampling Station #5 on the Pulgas Discharge Channel. Project construction as described in the Draft EIR (Chapter 3, Section 3.6) and post-construction maintenance (Draft EIR, Chapter 3, Section 3.7.3) would also be identical for the variant. In general, the LCSDI Variant would achieve all the project goals and objectives as the proposed project, although the ability to help meet the SFPUC's dry year delivery needs could be slightly affected (see further discussion below, Section 3.3, Environmental Effects of the LCSDI Variant, Relationship to the WSIP). The only difference between the proposed project and the variant is a modification to post-construction operations (Draft EIR, Chapter 3, Section 3.7.2) to implement the proposed minimum water release schedule.

Currently, flows to lower San Mateo Creek are limited to a few sources. During dry weather, inflow to lower San Mateo Creek immediately below LCSD is from unintended leakage of about 0.6 cubic feet per second (cfs) from SFPUC pipes and from subsurface seepage of about 0.1 cfs. During wet weather, flow in the creek immediately below the dam is increased by stormwater runoff from the surrounding area as well as stormwater runoff directed to the stilling basin system from Interstate 280 (I-280) and the Skyline Boulevard Bridge. As described in the Draft

EIR (Chapter 3, page 3-13), on rare occasions, about every six or seven years when needed to manage high reservoir levels, the SFPUC makes controlled releases of up to 600 cfs from Crystal Springs Reservoir to lower San Mateo Creek. Although infrequent, these controlled releases of up to 600 cfs are considered to be part of existing, normal operations. Controlled emergency releases are made when the rate of local inflow is such that the water surface elevation in the reservoir is predicted to imminently reach the spillway elevation and cause an uncontrolled spill (i.e., when water from the reservoir flows over the crest of the dam). Under existing conditions, the SFPUC can make emergency releases of water through the valves at the dam at a sustained rate of 800 cfs and at 1,000 cfs for short periods of time. Controlled emergency releases and uncontrolled spills only occur during very large and unexpected storms, when the water surface elevation in the reservoir cannot be kept below the spillway crest elevation by normal controlled releases (up to 600 cfs) to San Mateo Creek and by pumping water to San Andreas Reservoir. No uncontrolled spills or controlled emergency releases have occurred in the last 25 years (SFPUC, 2010d).

Under future conditions with implementation of the LCSDI Variant, operations of the dam and reservoir would remain essentially the same or similar to existing operations except that the SFPUC would also implement the minimum water release schedule to enhance habitat for steelhead and other native fishes in lower San Mateo Creek as well as implement a long-term monitoring plan to assess the affects of the releases on aquatic resources.

As shown in **Table C&R 3-1**, the SFPUC would implement year-round releases from the reservoir to San Mateo Creek below LCSD, between 3 cfs and 17 cfs, depending on the water year type and the time of year. The SFPUC would release water from the reservoir to supplement unregulated runoff and accretions from San Mateo Creek below the dam, with the specific minimum flows shown in the table required at the U.S. Geological Survey (USGS) gage located on lower San Mateo Creek several hundred feet downstream of the dam. The target releases have been designed to provide conditions suitable to support the enhancement of native fisheries habitat along San Mateo Creek below LCSD. As part of the minimum water release commitment to NMFS and CDFG, the SFPUC would also implement a long-term aquatic resources monitoring plan that would evaluate the effects of the flow schedule on stream conditions, document the utilization of the stream by anadromous fishes, and assess fish community structure and population health (SFPUC, 2010b).

Water from Crystal Springs Reservoir that is used to meet the minimum water release schedule would be discharged through the low-flow release system being constructed as part of the CSSA Transmission Upgrade project. The low-flow release system is designed to discharge onto a rock slope protection zone that will be constructed as part of the dissipation structure and keyed into the creek bed to protect the creek and bank from erosion.

Consistent with the terms of the minimum water release schedule, the SFPUC would exercise the low-flow release system year-round to meet the flow requirements at the compliance point, regardless of ambient weather conditions. However, in the event that elevated reservoir levels require the SFPUC to make controlled releases (estimated to occur once every six to seven years), those releases would also be made through the dissipation structure using a separate high-flow

TABLE C&R 3-1
SAN MATEO CREEK MINIMUM RELEASE SCHEDULE BELOW LOWER CRYSTAL SPRINGS DAM³

Flow Schedule Decision Date	Flow Schedule Application Period	Dry Year Type (Schedule B)			Normal/Wet Year Type (Schedule A)		
		Cumulated precipitation Index for Water-Year Classification (in) ¹	Flow Ramping Schedule (cfs)	Flow Requirement (cfs)	Cumulated Precipitation Index for Water-Year Classification (in)	Flow Ramping Schedule (cfs)	Flow Requirement (cfs)
N/A	Oct 1 – Dec 14	N/A	N/A	3	N/A	N/A	3
N/A	Dec 15 – Jan 12	N/A	N/A	5	N/A	N/A	5
Jan. 12 ²	Jan. 15 – Mar 15	≤ 10.3	Jan 13: 5 cfs Jan 14: 7 cfs	10	> 10.3	Jan 13: 7 cfs Jan 14: 12 cfs	17
N/A	Mar 16 – Mar 30	N/A	N/A	8	N/A	Mar 16-17: 15 cfs Mar 18-19: 12 cfs	10
N/A	Mar 31 – Apr 30	N/A	N/A	5	N/A	Mar 31-Apr 1: 7 cfs	5
N/A	May 1 – Sep 30	N/A	N/A	3	N/A	N/A	3

NOTES:

- ¹ San Mateo Creek precipitation index is the average of daily rainfall measured at four SFPUC gages: Davis Tunnel, San Andreas Dam, Lower Crystal Spring Dam, and Upper Crystal Springs.
- ² The decision on January 12 is based on cumulated precipitation index to January 11.
- ³ If runoff from watersheds below Crystal Springs Dam is creating unacceptable flooding conditions during precipitation events, the SFPUC may vary from the minimum flow requirements to not exacerbate this flood risk. In these rare situations, varying from this schedule will not result in anything less than the minimum flow conditions in the reach between Crystal Springs Dam and the USGS gage on lower San Mateo Creek, which is the compliance location for the minimum flow requirements.

SOURCE: SFPUC, 2010b.

discharge system. However, the total maximum discharge from the dissipation structure from both the low-flow and high-flow release systems, would be 600 cfs, the same as under current operations. Thus, the total magnitude and frequency of controlled releases during normal operations would be the same or similar to current controlled releases, even with implementation of the proposed year-round minimum water releases to lower San Mateo Creek (SFPUC, 2010d).

As noted in footnote 3 of Table C&R 3-1, if runoff from watersheds below LCSD during major precipitation events creates unacceptable downstream flooding conditions, the SFPUC would decrease its low flow releases to avoid exacerbating the flood risk. Therefore, the flood risk would not increase with the proposed change in operations (see further discussion below, Section 3.3, Environmental Effects of the LCSDI Variant, Hydrology). In these rare situations when there is a flood risk associated with runoff from watersheds below LCSD, reductions in the low-flow

releases would still allow the SFPUC to maintain compliance with the proposed minimum water release schedule at the USGS gage because precipitation and runoff conditions would maintain sufficient flow in the creek in this reach over the minimum requirements.

Implementation of the water release schedule would not change the long-term patterns of water storage or surface water elevations in Crystal Springs Reservoir as described for the proposed project in the Draft EIR (Chapter 3, Section 3.7, pages 3-37 to 3-39). Similar to the proposed project, by regulating inflow from the Hetch Hetchy Aqueduct and outflow pumped to San Andreas Reservoir as well as by monitoring local watershed runoff, the SFPUC would operate the LCSD and reservoir to keep the reservoir as full as possible without exceeding the maximum normal operating level of 287.8 feet and to avoid uncontrolled spills to the extent possible.

The SFPUC would commence implementation of the minimum water release schedule upon completion of construction of the proposed dam and stilling basin improvements and upon completion of construction activities for the CSSA Transmission Upgrade project, including the low-flow release system, dissipation structure, pump station, and reservoir outlet structures. The schedule for completion of all components and commencement of the minimum water releases is estimated to be the fall of 2013.

3.3 Environmental Effects of LCSDI Variant

3.3.1 Introduction

In order to ensure CEQA compliance, the LCSDI Variant is evaluated at an equal level of detail as the proposed project as presented in the Draft EIR. This section provides an analysis of the environmental effects of the LCSDI Variant, drawing upon all relevant analysis of the proposed project as previously described in the Draft EIR. All impacts associated with raising Sampling Station #5 along the Pulgas Discharge Channel would be identical to those described for the proposed project in the Draft EIR and are not discussed further in the discussion below. As described below, the variant would result in all the same significant impacts and require the same mitigation measures as the proposed project. With few exceptions (e.g., hydrology/water quality, terrestrial biological resources, and fisheries), the impact analysis of the variant indicates that the significance determination of all impacts would be the same as those for the proposed project; and in the case of the exceptions, the impact determinations would change from *less than significant* to *beneficial*.

3.3.2 Relationship to the WSIP

The LCSDI Variant would be considered one component of the SFPUC's Water System Improvement Program (WSIP). Therefore, similar to the proposed project (as described in the Draft EIR, Section 5.1, pages 5.1-3 to 5.1-5), the variant would also contribute to the WSIP's systemwide water supply, systems operations, and growth inducement impacts as identified in the Program EIR (PEIR) on the WSIP (San Francisco Planning Department, 2008). Appendix D of the Draft EIR, Tables D-1 through D-4, summarizes the WSIP water supply and system operations impacts and the associated mitigation measures for each geographic region as

presented in the PEIR. The LCSDI EIR tiers from the WSIP Final PEIR and incorporates by reference the relevant analyses of the WSIP Final PEIR with respect to the impacts and mitigation measures, as applicable to the proposed project. Therefore, this analysis of the LCSDI Variant also incorporates by reference the WSIP Final PEIR's analysis of the impacts associated with the WSIP's water supply strategy, including the WSIP Final PEIR analysis and conclusions regarding impacts on the City and County of San Francisco's watersheds and growth-inducement impacts.

Fishery Flows for San Mateo, Alameda, and Calaveras Creeks

Implementation of the proposed minimum water release schedule for San Mateo Creek would reduce the amount of supply captured by the SFPUC regional water system from the local watersheds for delivery to customers compared to the amount assumed in the WSIP PEIR, as discussed in more detail below. In addition to the release schedule for San Mateo Creek, the SFPUC has developed proposed instream flow schedules for Alameda and Calaveras Creeks to benefit native fish habitats as part of the SFPUC's Calaveras Dam Replacement project (CDRP); the proposed flow schedules are shown in **Tables C&R 3-2 and C&R 3-3** (SFPUC, 2010c). Similar to the water release schedule for San Mateo Creek, the flow releases to Alameda and Calaveras Creeks were developed during the formal consultation process with the U.S. Army Corps of Engineers, NMFS, and CDFG for Endangered Species Act compliance. The flow schedule for San Mateo Creek would be implemented in approximately 2013, after completion of the LCSDI and CSSA Transmission Upgrade projects. The SFPUC would implement the flow schedules for Alameda and Calaveras Creeks following construction of the CDRP, estimated to be completed by 2015.

Water Supply Effects of Fishery Flows

The adopted WSIP water supply objectives include: (1) meeting a target delivery of 265 mgd from the watersheds through 2018 and (2) rationing at no greater than 20 percent systemwide in any one year of a drought. With these objectives in mind, the SFPUC has evaluated the water supply effects of the proposed fishery enhancements to the CDRP, LCSDI, and CSSA Transmission Upgrade projects; the analysis is presented in an August 10, 2010 memorandum entitled *Water Supply Effects of Alameda Creek and San Mateo Creek Fishery Flows* (SFPUC, 2010e). In combination, the proposed fishery enhancements for the CDRP and the proposed fishery flow releases from LCSDI would result in a potential average annual decrease in available water supply for the regional system of 7.4 million gallons per day (mgd) from what was assumed under the adopted WSIP. This potential decrease is attributable to average annual releases/bypasses of 3.9 mgd to Alameda and Calaveras Creeks and releases of 3.5 mgd to San Mateo Creek, for a total annual average of 7.4 mgd.

The estimated potential decrease in available water supply assumes the adopted WSIP program (referred to as the "Phased WSIP Variant" in the WSIP PEIR and "adopted WSIP" in this section) average annual target water delivery objective of 265 mgd for the regional water system. The assessment of the water supply effects also assumes that all of the water supply components of the adopted WSIP are implemented and that all WSIP facility improvement projects are implemented,

TABLE C&R 3-2
PROPOSED INSTREAM FLOW SCHEDULE IN ALAMEDA CREEK BELOW THE
ALAMEDA CREEK DIVERSION DAM (ACDD)

Flow Schedule Application Period	Flow Requirements	Comment
Apr 1 – Nov 30	All unimpaired flow upstream of the ACDD	No diversions from Alameda Creek to Calaveras Reservoir (ACDD gates closed)
Dec 1 – Mar 31	Up to 30 cfs dependent upon unimpaired flows in Alameda Creek above the ACDD Downstream flow requirements can be met through a combination of flows released through the fish ladder, ACDD bypass tunnel, and/or over the dam crest.	Diversion of up to 370 cfs from Alameda Creek to Calaveras Reservoir (ACDD gates open)

SOURCE: SFPUC, 2010c

TABLE C&R 3-3
SUMMARY OF THE PROPOSED INSTREAM FLOW SCHEDULES BELOW CALAVERAS DAM

Flow Schedule Decision Date	Flow Schedule Application Period	Dry (Schedule B) ¹		Normal/Wet (Schedule A) ¹	
		Cumulative Arroyo Hondo Flows for Water-Year Classification (MG)	Flow Release (cfs)	Cumulative Arroyo Hondo Flows for Water Year Classification (MG)	Flow Release (cfs)
N/A	October	N/A	7	N/A	7 ²
N/A	Nov 1 – Dec 31	N/A	5	N/A	5
Dec 29	Jan 1 – Apr 30	<= 360	10 ²	> 360	12 ²
Apr 30	May 1 – Sept 30	<= 7,246	7	> 7,246	12

NOTES: MG = million gallons; cfs = cubic feet per second; N/A = not applicable; <= means less than or equal to

¹ The water-year classification is based on monthly cumulative flows over 26 years of record at the USGS gage on Arroyo Hondo, an unregulated tributary upstream of Calaveras Reservoir. Cumulative monthly streamflows at the Arroyo Hondo gage were ranked as exceedance probabilities and divided into two water-year types. "Dry" years have a >60% exceedance probability, and "Normal/Wet" years have a 0 to 60% exceedance probability.

² Flows would be ramped as specified in SFPUC, 2010c.

SOURCE: SFPUC, 2010c.

including the proposed water recapture facility on Alameda Creek.¹ Fishery flow releases to San Mateo Creek would begin upon completion of the LCSDI and CSSA Transmission Upgrade projects, scheduled for 2013, resulting in an initial water supply reduction for the regional system of 3.5 mgd. Upon completion of CDRP, scheduled for 2015, the additional supply reduction of 3.9 mgd for the system would result, for a total potential supply reduction of 7.4 mgd by 2015.

As a result of the proposed fishery flows to Alameda, Calaveras, and San Mateo Creeks, the SFPUC might not be able to meet the adopted WSIP water supply objectives between 2013 and 2018 without a reduction in demand, an increase in rationing, and/or a supplemental supply.

The WSIP PEIR analyzed many water supply options and their associated impacts. It also described the water supply actions that the SFPUC and/or wholesale customers could take in the event that the SFPUC was not able to meet demand through 2030, as well as the possibility of short-term water supply actions that the SFPUC and/or wholesale customers might need to take to meet customer demand through 2018. If the demand for water supply meets the projections before 2018, it is likely that the SFPUC and wholesale customers could take similar actions to make up for the potential gap in supply caused by the reduction in water supply associated with the proposed fishery flow releases between 2013 and 2018. When the SFPUC approved the WSIP, however, it did not approve specific projects to provide supplemental water supply. Any decision to implement a specific water supply project would require SFPUC approval and environmental review of that decision, pursuant to CEQA. No specific water supply projects are proposed at this time.

The following analysis describes potential water supply scenarios that could occur during the period 2013 to 2018, following implementation of the proposed fishery flows. However, the actual effects would depend on numerous factors including, but not limited to, customer demand (purchase request) levels, the need for rationing due to drought conditions, and the availability of additional water supply sources.

Reduction in Demand

The WSIP had initially envisioned meeting the SFPUC service area demand through 2030. Projected demand for 2030 was estimated at 300 mgd. The PEIR analyzed the effects of meeting future demand through 2030 using the following water supply portfolio:

¹ The adopted WSIP includes the Alameda Creek Fishery Enhancement Project—since renamed the Upper Alameda Creek Filter Gallery (Filter Gallery) project—which had the stated purpose of recapturing downstream flows released for fishery benefits, assumed at the time to be consistent with the 1997 Memorandum of Understanding (MOU) between CDFG and SFPUC. Implementation of the Filter Gallery project was intended to provide for “no net loss” of water supply as a result of the fishery flows bypassed from the Alameda Creek Diversion Dam and/or released from Calaveras Dam. At the time the WSIP PEIR was certified, the Filter Gallery project was described as having a capacity of 6,300 acre-feet per year (afy) to match the peak flow release requirements of the MOU. This analysis of the water supply effects for the proposed additional fishery enhancements continues to assume that the recapture facility capacity is 6,300 afy, consistent with the PEIR analysis, even though the proposed flow schedules for CDRP, if adopted, would supersede the flow capacity of the recapture facility stated in the 1997 MOU. However, the Filter Gallery project will undergo separate, project-level CEQA analysis, and the SFPUC will re-evaluate the appropriate capacity for this proposed facility as part of environmental review for this project.

Supply in All Year Types

- Water from the Tuolumne River watershed
- Water from the Alameda Creek watershed
- Water from the San Mateo County watersheds (i.e., San Mateo and Pilarcitos Creeks watersheds)

Supply in Dry-year Types (with no greater than 20 percent systemwide rationing in any one year)

- Restoration of Calaveras Reservoir capacity
- Restoration of Crystal Springs Reservoir capacity
- Westside Groundwater Basin conjunctive use (i.e., in-lieu recharge)
- Water transfers with Modesto Irrigation District / Turlock Irrigation District

In developing the adopted WSIP, the SFPUC restricted deliveries from the watersheds to an annual average of 265 mgd through 2018. Although the current projections for water deliveries from the watersheds through 2018 remain at 265 mgd, in the last few years, SFPUC deliveries have been below the projected levels, as illustrated in **Table C&R 3-4**, below. If this trend continues, the SFPUC might not need 265 mgd from its watersheds to meet purchase requests through 2018. As a result, the need for supplemental water supplies or other actions (such as increased rationing) to offset the water supply loss of 3.5 mgd beginning in 2013 and increasing to 7.4 mgd in 2015 associated with the proposed fishery flow releases may be less than anticipated. If this lower-than-projected demand level persists, then the proposed fishery flow releases to Alameda, Calaveras, and San Mateo Creeks might not affect the SFPUC's ability to meet the adopted WSIP water supply objectives through 2018.

TABLE C&R 3-4
WATER DELIVERIES IN SFPUC SERVICE AREA¹

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Total Deliveries (mgd)	247.5	257	254.1	243.4	227.1 ²

¹ "Total System Usage" plus 0.7 mgd for Lawrence Livermore National Laboratory use and 0.4 mgd for Groveland. No groundwater use is included in this number, but unaccounted-for-water is included. See SFPUC, 2010e for details.

² Provisional data based on (1) FY 2009/2010 sales data for wholesale customers and suburban retail customers and (2) provisional FY 2009/2010 J-Table data for San Francisco County line deliveries less 0.2 mgd for Daly City use.

SOURCE: SFPUC, 2010e.

The SFPUC monitors its water supply and demand data on an on-going basis as part of its operation as a water supply agency. The SFPUC also continuously monitors factors affecting both the delivery demand and the ability of the regional water system to meet the demand, consistent with the adopted WSIP goals. The SFPUC thus anticipates any changes from its supply and demand projections, and plan for any shortfalls before they occur. Under the adopted WSIP, the SFPUC will update demand projections for its wholesale and retail customers and reevaluate customer water delivery needs in the years approaching 2018.

Demand Management

If purchase requests begin to approach 265 mgd from the watersheds by 2018, then the SFPUC might be able to manage the water supply loss associated with the fishery flow releases between 2013 and 2018 by implementing additional conservation, recycling, and/or groundwater conjunctive-use programs before 2018. Such actions were analyzed in the WSIP PEIR, Section 9.2.4 – Aggressive Conservation/Water Recycling and Local Groundwater Alternative (WSIP PEIR, Vol. 4, Chapter 9, pages 9-47 to 9-59).

Increase in Rationing

The adopted WSIP provides a dry-year water supply program that limits systemwide rationing to 20 percent. The adopted WSIP was based on the following drought shortages during the design drought;² 3.5 out of 8.5 years at 10 percent systemwide rationing and 3 out of 8.5 years at 20 percent. If water deliveries reach 265 mgd between 2013 and 2018 and the SFPUC did not develop a supplemental water supply in dry years to offset the effects of the proposed fishery flows on water supply, rationing could increase during dry years, depending on the severity of the drought. Under this scenario, rationing during the design drought would increase by approximately 1 percent in rationing years due to the proposed fishery flow releases. If the SFPUC experiences a drought between 2013 and 2018 in which rationing needed to be imposed (i.e., water deliveries reached 265 mgd), rationing would increase by approximately 1 percent in shortage years, potentially exceeding the adopted WSIP level of service goal for dry-year deliveries (SFPUC, 2010f).

In the WSIP PEIR, the alternatives analysis included the No Project Alternative as well as an Aggressive Conservation/Water Recycling and Local Groundwater Alternative. These alternatives assumed that in order to meet customer demand by 2030, rationing during dry years could be increased up to 25 percent systemwide, and the effects of the increased level of rationing is discussed in the PEIR (WSIP PEIR, Vol. 4, Chapter 9, pages 9-28 to 9-31 and 9-47 to 9-59). These effects include the combined effects of droughts and rationing on customers, such as “demand hardening” (i.e., the increasing difficulty and expense of achieving short-term water conservation levels during shortages as more long-term conservation measures are implemented and water-use efficiency is maximized), socioeconomic effects on landscaping/nursery and other water-based industries, and potential lifestyle effects. Thus, the PEIR addressed the effects of increased rationing beyond the 21 percent levels that could potentially occur with implementation of the proposed fishery flow releases.

² The design drought is a planning and operation tool that water supply agencies use to define a reasonable worst-case drought scenario based on local hydrology to establish design and operating parameters for their water systems. For the purposes of regional water system planning, the SFPUC uses a design drought that anticipates and plans for a more severe drought than historical events. The WSIP uses a design drought based on the hydrology of the six years of the worst historical drought (1987–1992) plus the 2.5 years of the 1976–1977 drought, for a combined total of an 8.5-year design drought sequence.

Supplemental Water Supply

As discussed above, although current demand is below projections, if delivery demands did begin to approach 265 mgd from the watersheds by 2018, then the SFPUC may be able to manage the water supply loss associated with the fishery flow releases between 2013 and 2018 through the following actions and considerations:

- Water transfer from the Modesto Irrigation District and/or the Turlock Irrigation District
- Increase in Tuolumne River supply
- Revising the Filter Gallery project capacity
- Development of a desalination project

As stated above, if any of the above additional water supply sources are determined to be required between 2013 and 2018 as a result of the fishery flow releases, the SFPUC would conduct the necessary planning studies, and the San Francisco Planning Department would complete the CEQA environmental review requirements, as appropriate, prior to implementation.

In addition to potential SFPUC actions, the WSIP PEIR identified and evaluated actions that the SFPUC's customers might take in response to a potential water supply shortfall (WSIP PEIR, Section 9.2.2 – No Program Alternative, page 9-25, Wholesale Customer Actions and Section 9.2.4 – Aggressive Conservation/Water Recycling and Local Groundwater Alternative, page 9-52, Wholesale Customer Actions). The potential shortfall of 3.5 mgd beginning in 2013 and increasing to 7.4 mgd in 2015 as a result of the proposed fishery flow releases—assuming projections for purchase requests through 2018 remain as projected in the PEIR—would be less than the potential water supply shortfalls of up to 25 mgd that were assessed in the WSIP PEIR in Chapter 9, CEQA Alternatives. Thus, the WSIP PEIR analysis of water supply shortfalls encompasses the smaller potential shortfall that the SFPUC has identified with respect to the proposed fishery flow releases. Potential actions include developing additional recycled water projects, aggressive conservation, developing a desalination project(s), and/or pursuing a water supply transfer.

The potential environmental effects associated with actions that the SFPUC and/or the wholesale customers might take in response to a water supply shortfall from the regional water system are discussed in PEIR Chapter 9, CEQA Alternatives, and also in Chapter 13, Section 13.4, Phased WSIP Variant. The PEIR evaluation of the potential actions that the SFPUC and/or the wholesale customers might implement to address a supply shortfall (WSIP PEIR, Chapter 13, Section 13.4, Phased WSIP Variant, Tables 13.6 and 13.8, page 13-24 and pages 13-27 to 13-28, respectively) remains valid and adequately addresses the potential environmental impacts on water supply and system operations that might occur due to implementation of the proposed fishery flow releases (WSIP PEIR, Chapter 13, Section 13.4, pages 13-29 to 13-45, Environmental Impacts of the Phased WSIP Variant Compared to those of the WSIP).

Conclusion

The SFPUC has identified a potential water supply shortfall that could occur between 2013 and 2018 as a result of the proposed fishery flow releases. The SFPUC has already committed to reevaluating 2030 demand and water supply options before 2018 under the adopted WSIP. In the event that water supply and demand data suggest that a shortfall will occur before that time, the SFPUC would evaluate the options and consider how it will address any shortfall. Under this scenario, implementation of the fishery flow releases would not result in any different effects on water supply and system operations from those analyzed in the PEIR for the WSIP alternatives and variants. If the SFPUC completed the study by 2018 (but not before) and took no other actions, the SFPUC might not be able to fully implement its adopted level of service goal of no more than 20 percent rationing during a drought. If a severe drought were to occur in the years before 2018 and water deliveries from the watersheds reach 265 mgd, the SFPUC might have to increase rationing by approximately 1 percent over the adopted WSIP's 20 percent rationing goal. In light of the proposed fishery flow schedules, the SFPUC could choose to undertake this additional water supply analysis and reevaluate customer demand ahead of 2018, or alternatively, consider marginally increasing the rationing beyond 20 percent if needed. While the range of possible actions and impacts on water supply and system operations were analyzed in the WSIP PEIR, any changes from the approved WSIP would require the SFPUC to reconsider its decision on the adopted WSIP. Another possibility is that the SFPUC wholesale customers could choose to undertake actions identified in the WSIP PEIR to address a shortfall, including more aggressive water recycling, conservation, local groundwater, or desalination projects or water transfers. The general types of effects associated with these actions were also assessed in the WSIP PEIR for greater water supply shortfalls than those identified for the fishery flow releases. Consequently, no further analysis of impacts on water supply and system operations is required at this time.

3.3.3 Plans and Policies

Plans and policies relevant to the variant are identical to those for the proposed project described in Draft EIR (Chapter 4, Section 4.2), and the consistency of the variant with those plans and policies is also essentially identical to that described in the Draft EIR (Chapter 4, Section 4.3). In addition, under the variant, the SFPUC would operate LCSD and Crystal Springs Reservoir in a manner that protects and restores native fish and wildlife downstream of the dam, and the releases would generally mimic the variation of the seasonal hydrology. Therefore, the variant would be consistent with goals of the Water Enterprise Environmental Stewardship Policy.

3.3.4 Land Use

Draft EIR Section 5.2, Land Use (pages 5.2-1 through 5.2-12), evaluates the compatibility of the proposed project with the existing land uses in the surrounding area and presents measures to mitigate land use impacts. Since construction activities associated with the variant are the same as those for the proposed project, temporary disruption or displacement of existing land uses during construction would be the same as those described in the Draft EIR. During project operations, an increase in flow releases would be evident in lower San Mateo Creek. However, the increase in

flows would not introduce new uses nor would the variant permanently displace existing land uses. Therefore, operational impacts associated with the variant would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential land use impacts as the proposed project, and the same mitigation measures would be required.

3.3.5 Aesthetics

Draft EIR Section 5.3, Aesthetics (pages 5.3-1 through 5.3-39), addresses the potential aesthetic and visual quality impacts associated with implementation of the proposed project and identifies mitigation measures that would reduce these impacts. Since construction activities associated with the variant are the same as those for the proposed project, all construction-related impacts on scenic resources (including effects of light or glare) would be the same as those described in the Draft EIR for the proposed project.

Project operations under the variant would result in somewhat higher flows in lower San Mateo Creek and could be visible from publicly accessible areas such as Crystal Springs Road, a county-designated scenic road. However, currently there is water in the creek year-round and the increase in flows would barely be perceptible to passers-by. Even if the changes are minimally discernable, views of flowing water in a natural creek setting are generally aesthetically pleasing and permanent impacts on scenic resources would not be worsened and may in fact be beneficial. The potentially significant and unavoidable impact related to long-term visual effects due to inundation of shoreline woodlands would be the same as the proposed project. Therefore, operational impacts associated with the variant would be the same as or better than those presented in the Draft EIR. Implementation of the variant would result in the same potential aesthetic and visual quality impacts as the proposed project, and the same mitigation measures would be required.

3.3.6 Population and Housing

Draft EIR Section 5.4, Population and Housing (pages 5.4-1 through 5.4-3), discusses the potential for project-specific aspects of the proposed project to induce substantial growth, displace housing, create a substantial demand for additional housing in the project area, or necessitate the construction of housing outside the project area. As described in Section 5.4, there would be no growth-inducement impact due to project-specific considerations. Similarly, implementation of the variant would not result in any project-specific growth-inducement impacts.

3.3.7 Cultural and Paleontological Resources

Draft EIR Section 5.5, Cultural and Paleontological Resources (pages 5.5-1 through 5.5-32), evaluates potential effects on cultural resources (including historic resources, archaeological resources, and paleontological resources) that might be present in the vicinity of the proposed project and presents mitigation measures to reduce impacts to a less-than-significant level, where feasible. Implementation of the variant would result in the same significance determinations presented in Section 5.4. Since construction activities associated with the variant are the same as those for the proposed project, all construction-related impacts on cultural resources would be the same as those described in the Draft EIR, including the significant and unavoidable effects on historic resources.

Implementation of the minimum water release schedule would result in minimally higher flows in lower San Mateo Creek compared to existing conditions, with low flows during the dry season and higher flows in the rainy season, mimicking the natural hydrology of the creek. All releases would be made through a dissipation structure to minimize erosion, and the increases in flow would be too small to substantially increase erosion rates. Thus, it is unlikely that the nominal increase in seasonal flows could expose or damage currently buried cultural resources along the creek channel, if any were to exist. Furthermore, all other operation and maintenance activities proposed under the variant would be similar to those under the proposed project; therefore, operational impacts on cultural resources would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential cultural resources impacts as the proposed project, and the same mitigation measures would be required.

3.3.8 Transportation and Circulation

Draft EIR Section 5.6, Transportation and Circulation (pages 5.6-1 through 5.6-28), evaluates the potential impacts on traffic, transportation, and circulation that could result from construction and operation of the proposed project and identifies mitigation measures that would reduce these impacts. Implementation of the variant would result in the same significance determinations presented in Section 5.6. Since construction activities associated with the variant are the same as those for the proposed project, all temporary traffic impacts related to construction (including delays, impaired access, displacement of parking, and traffic safety hazards) would be the same as those described in the Draft EIR. Operational releases to lower San Mateo Creek associated with the variant would not affect local traffic conditions. Furthermore, all other operation and maintenance activities proposed under the variant would be similar to those under the proposed project; therefore, operational traffic impacts of the variant would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential traffic impacts as the proposed project, and the same mitigation measures would be required.

3.3.9 Noise and Vibration

Draft EIR Section 5.7, Noise and Vibration (pages 5.7-1 through 5.7-33), evaluates the potential noise and vibration impacts associated with construction and operation the proposed project and identifies mitigation measures that would reduce these impacts. Implementation of the variant would result in the same significance determinations presented in Section 5.7. Since construction activities associated with the variant are the same as those of the proposed project, all short-term noise and vibration impacts related to construction would be the same as those identified in the Draft EIR, including the significant and unavoidable impacts associated with nighttime construction activities at the dam and along haul routes. Operational releases to lower San Mateo Creek associated with the variant would not result in adverse effects on sensitive noise receptors. Furthermore, all other operation and maintenance activities associated with the variant would be similar to those described in the Draft EIR; therefore, operational noise and vibration impacts would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential noise and vibration impacts as the proposed project, and the same mitigation measures would be required.

3.3.10 Air Quality

Draft EIR Section 5.8, Air Quality (pages 5.8-1 through 5.8-33), evaluates the proposed project's consistency with air quality attainment plans and regulatory standards and estimates potential increases in criteria air pollutants and greenhouse gases (GHGs) that would be associated with proposed project implementation. Implementation of the variant would result in the same impacts and, therefore, significance determinations presented in Section 5.8. Since construction activities associated with the variant are the same as those for the proposed project, all construction-related impacts on air quality would be the same as those described in the Draft EIR. Operational releases to lower San Mateo Creek associated with the variant would not degrade air quality. Furthermore, all other operation and maintenance activities associated with the variant would be the same as those described in the Draft EIR because no mechanical pumping is required for the releases, which would flow by gravity, and only a small amount of electricity is required to operate the low-flow release system; therefore, operational air quality impacts would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same air quality impacts as the proposed project, and the same mitigation measures would be required.

3.3.11 Wind and Shadow

Draft EIR Section 5.9, Wind and Shadow (pages 5.9-1 through 5.9-4), discusses the potential impacts related to wind and shadow that could occur during construction and operation of the proposed project and assess the potential for project implementation to adversely affect existing wind and shadow patterns. As described in Section 5.9, implementation of the proposed project would not result in impacts related to wind and shadow. Likewise, implementation of the variant would not adversely affect existing wind and shadow patterns.

3.3.12 Recreation

Draft EIR Section 5.10, Recreation (pages 5.10-1 through 5.10-23), evaluates potential impacts on recreational resources that could result from implementation of the proposed project and identifies mitigation measures to reduce or avoid impacts, as appropriate. Implementation of the variant would result in the same significance determinations presented in Section 5.10. Since construction activities associated with the variant are the same as those for the proposed project, all temporary conflicts with recreational resources during construction would be the same as those described in the Draft EIR, including the significant and unavoidable cumulative impacts on recreational resources.

Operational releases from Crystal Springs Reservoir associated with the variant would result in minimal increases in flow in lower San Mateo Creek. Lower San Mateo Creek is not currently used for recreation and so the increases in flow would have no adverse effect on recreational resources in the project vicinity or further downstream along San Mateo Creek. Furthermore, all other operation and maintenance activities associated with the variant would be the same as those described in the Draft EIR; therefore, operational impacts on recreational resources would be the same as those presented in the Draft EIR. Implementation of the variant would result in

the same potential impacts on recreational resources as the proposed project, and the same mitigation measures would be required.

3.3.13 Utilities and Service Systems

Draft EIR Section 5.11, Utilities and Service Systems (pages 5.11-1 through 5.11-12), addresses potential impacts on utilities and service systems that could occur with implementation of the proposed project. This section also evaluates potential impacts associated with solid waste generated by demolition, excavation, and other construction activities. Implementation of the variant would result in the same impacts, and, therefore, significance determinations presented in Section 5.11. Since construction activities associated with the variant are the same as those for the proposed project, all temporary conflicts with existing utilities and impacts related to the compliance with applicable solid waste statutes would be the same as those described in the Draft EIR. Increased operational flows associated with the variant would result in nominally higher water levels in San Mateo Creek, but not to levels that could affect utilities within the creek channel because the proposed releases would remain within the current capacity of the creek. Furthermore, the proposed water releases would not require new flood control facilities because they would not contribute to downstream flooding conditions. As described below under Hydrology and Water Quality, the magnitude and frequency of controlled releases in combination with the minimum water releases would remain the same as under existing conditions, with a maximum of 600 cfs occurring about every six or seven years. In addition, other operations and maintenance activities associated with the variant would be the same as those described in the Draft EIR; therefore, long-term effects on utilities and service systems would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential impacts on utilities and service systems as the proposed project, and the same mitigation measures would be required.

3.3.14 Public Services

Draft EIR Section 5.12, Public Services (pages 5.12-1 through 5.12-4), assesses potential impacts on public services (including law enforcement and fire protection services) that could result from implementation of the proposed project. As described in Section 5.12, construction and operation of the proposed project would not substantially increase the demand for public services, including fire protection, schools, parks, or other services. Operational releases to lower San Mateo Creek associated with the variant would not affect the demand for public services, and no new or expanded facilities would need to be built (the construction of which could have adverse impacts on the environment) given that there is no relationship between an additional small amount of creek flow and any municipal service required by the public. Since all other construction and operational activities associated with the variant would be identical to those described in the Draft EIR, similar to the proposed project, no construction-related or operational impacts on public services would occur under the variant.

3.3.15 Biological Resources

Draft EIR Section 5.13, Biological Resources, assesses potential impacts on biological resources that could occur with implementation of the proposed project. The section is divided into two main parts: Terrestrial and Wetland Resources and Fisheries. These resource areas are described separately below.

Terrestrial and Wetland Resources

Implementation of the variant would result in the same or better significance determinations as those for the proposed project (presented in Draft EIR in Section 5.13.3, Impacts and Mitigation Measures – Terrestrial and Wetland Resources; pages 5.13-60 through 5.13-117). Since construction activities associated with the variant are the same as those for the proposed project, all construction impacts on terrestrial and wetland resources (i.e., wetlands, sensitive habitats, and special-status species), would be identical to those described in the Draft EIR. In addition, since the patterns of storage and surface water elevations in Crystal Springs Reservoir would be the same under the variant as the proposed project, operational impacts on biological resources around the perimeter of the reservoir associated with fluctuation in surface water elevations and inundation effects would also be identical to those described for the proposed project in the Draft EIR.

The minimum water releases that would be implemented under the variant could be beneficial to riparian habitat and wetland resources in San Mateo Creek below the dam. The releases are intended to improve habitat for native fishes and would generally improve conditions for amphibians and other aquatic and riparian species. Therefore, operational impacts associated with the variant under Impact BI-9 (operational water discharge effects on riparian and/or aquatic resources) would be *beneficial*, rather than less-than-significant as was determined for the proposed project in the Draft EIR. With the exception of increased operational flows that would result in higher water levels along San Mateo Creek, all other operations and maintenance activities associated with the variant would be the same as those described in the Draft EIR; therefore, operational impacts on terrestrial biological resources would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same significant impacts on terrestrial and wetland resources as the proposed project, and the same mitigation measures would be required.

Fisheries

Draft EIR Section 5.13.7, Impacts and Mitigation Measures – Fisheries (pages 5.13-138 through 5.13-163), evaluates the potential impacts to fisheries resources associated with constructing and operating the proposed project and identifies mitigation measures, as appropriate. Implementation of the variant would result in the same significance determinations presented in Section 5.13.7. Since construction activities associated with the variant are the same as those for the proposed project, all short-term water quality, disturbance, direct injury, and streamflow impacts to fisheries resources related to construction would be the same as those described in the Draft EIR. All long-term impacts relating to the loss of riparian cover, shaded riverine aquatic cover, and aquatic habitat area associated with the variant would also be the same as those for

the proposed project. All operational impacts associated with inundation of riverine habitat upstream of LCSD would be identical to those determined in the Draft EIR.

Under the variant, the SFPUC would release water continuously below LCSD at a rate between 3 to 17 cfs, depending on the water year type and time of year (SFPUC, 2010b). Increased operational flows would result in higher water levels in lower San Mateo Creek immediately below the dam, particularly during the dry season when flow is limited to unintended leakage from the SFPUC pipes and seepage around and under the dam (see Draft EIR, Section 5.15, Hydrology and Water Quality, page 5.15-3). The higher water levels would increase the width and depth of water in the creek which would improve aquatic and riparian habitat.

Under existing conditions, instream flows and their effect on habitat quality and quantity have been identified as potentially limiting for the establishment of a viable steelhead population in lower San Mateo Creek. The minimum water release schedule associated with the variant was negotiated with NMFS and CDFG specifically to enhance steelhead/rainbow trout (*Oncorhynchus mykiss*) habitat along lower San Mateo Creek. As part of the minimum water release schedule, the SFPUC would implement a long term aquatic resource monitoring program which would evaluate the effects of the releases on stream conditions, document the utilization of the stream by anadromous fishes, and assess fish community structure and population health (SFPUC, 2010b). Results from the monitoring program would be used to measure performance of the minimum water release schedule to enhance existing habitats for *Oncorhynchus mykiss* (SFPUC, 2010b). The increase in operational flows associated with the variant would likely benefit native species in lower San Mateo Creek. Therefore, operational impacts associated with the variant under Impact BI-14 (reduction of streamflows downstream of construction area) would be *beneficial*, rather than less-than-significant as was determined for the proposed project in the Draft EIR.

3.3.17 Geology and Soils

Draft EIR Section 5.14, Geology and Soils (pages 5.14-1 through 5.14-20), analyzes the potential for the proposed project to be affected by or to increase risks associated with geologic, soils, and seismic hazards. Implementation of the variant would result in the same impacts as, and therefore, significance determinations presented in Section 5.14. Since construction activities associated with the variant are the same as those of the proposed project, all construction-related impacts (i.e., slope instability, erosion and loss of topsoil) would be the same as those described in the Draft EIR for the proposed project. Operational releases to lower San Mateo Creek associated with the variant would not result in impacts related to surface fault rupture, seismically-induced groundshaking, liquefaction, or seismically-induced landslides. Further, other operation and maintenance activities associated with the variant would be the same as those described in the Draft EIR; therefore, operational impacts related to geology and soils would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential impacts on geology and soils as the proposed project, and the same mitigation measure would be required.

3.3.18 Hydrology and Water Quality

Construction Impacts

Draft EIR Section 5.15.3.4 (pages 5.15-20 through 5.15-27) analyzes the potential construction impacts of the proposed project on hydrology and water quality. Since construction activities associated with the variant are the same as those for the proposed project with respect to improvements to the dam and stilling basin, all construction-related impacts (i.e., impacts to flow, groundwater levels, water quality in the reservoir and creek, and geomorphology) would be the same as those described in the Draft EIR for the proposed project under Impacts HY-1 through HY-4, and the same construction-related mitigation measures would be required.

Impacts associated with construction of the dissipation structure and low-flow release system required to implement the minimum water release schedule under the variant are described and analyzed in the CSSA Transmission Upgrade Final EIR and Addendum (San Francisco Planning Department, 2010a and 2010b). The analysis concludes that with implementation of mitigation measures, all construction impacts (related to degradation of water quality due to erosion, sedimentation, and dewatering) would be less than significant. Mitigation measures include implementation of site-specific erosion and sedimentation construction controls and construction dewatering plan.

Operational Impacts

Stream Hydrology and Flows in Lower San Mateo Creek

Currently the SFPUC does not actively release water from Crystal Springs Reservoir to lower San Mateo Creek on a regular basis. Controlled releases are occasionally made during unusually large storms, and very infrequently, there is an uncontrolled spill of water over the dam spillway. Currently, the only flow in the creek immediately below the LCSD during dry weather is seepage around and under the dam and unintended leakage from pipes and valves near the base of the dam. The rate of flow during dry weather is estimated to be about 0.7 cfs, of which 0.6 cfs is attributable to leakage and 0.1 cfs to seepage. The seepage would continue with implementation of both the LCSDI and the CSSA Transmission Upgrade projects; however, the leakage from pipes and valves near the base of the LCSD will be eliminated as part of the approved CSSA Transmission Upgrade project. Therefore, with implementation of the LCSDI Variant's minimum water release schedule, flow in the creek immediately below the dam in dry weather would be approximately 3.1 cfs (SFPUC, 2010d).

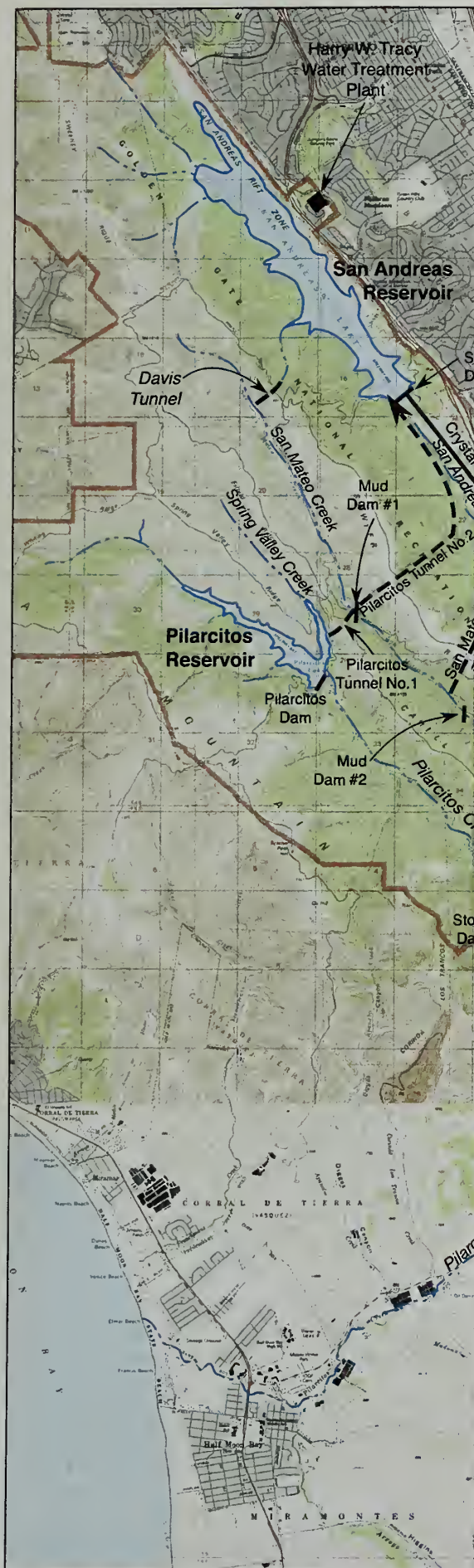
During wet weather, flow in lower San Mateo Creek increases rapidly in a downstream direction. Storm water runoff from I-280 and the Skyline Boulevard Bridge discharges into the stilling basin at the LCSD and contributes to flow in the creek immediately below the dam. A major tributary, Polhemus Creek, joins lower San Mateo Creek about 0.9 miles downstream of the dam, as shown in **Figure C&R 3-1**, and adds flow to it. Smaller tributaries and urban storm drains add wet weather flow between the Polhemus Creek confluence and San Francisco Bay.

There are no long-term records of flow in lower San Mateo Creek. The SFPUC has estimated flows in lower San Mateo Creek using the Bay Area Hydrology Model (SFPUC, 2010a). The information was developed using hydrologic data for a 38-year period from 1960 through 1997, a period which includes representative wet, normal and dry years. Flows were estimated at three locations along lower San Mateo Creek assuming no release of water from Crystal Springs Reservoir. The maximum flow in the creek above the Polhemus Creek confluence during the 38-year period was estimated to be about 40 cfs. The maximum flows in the creek below the Polhemus Creek confluence and at its mouth at San Francisco Bay during the 38-year period were estimated to be about 160 cfs and 440 cfs, respectively. The average annual maximum flows in the creek are considerably lower. For example, the average annual maximum flow in the creek below the Polhemus Creek confluence is estimated to be 56 cfs. The proposed minimum water releases from Crystal Springs Reservoir would add up to 17 cfs to these peak flows.

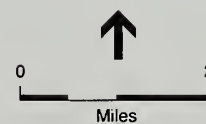
The greatest regularly occurring flows in lower San Mateo Creek are experienced when the SFPUC makes a controlled release of water from Crystal Springs Reservoir for reservoir management purposes. Larger flows can occur when the SFPUC makes a controlled emergency release or when an uncontrolled spill over the dam spillway occurs, but both controlled emergency releases and uncontrolled spills are very rare. Although minimizing controlled releases and uncontrolled spills of water to lower San Mateo Creek is one of the SFPUC's operational goals for Crystal Springs Reservoir, occasional releases are necessary to maintain the water level in the reservoir within the target range, when large and unexpected storms produce runoff over the reservoir watershed. The controlled releases are made from valves near the base of the LCSD at a maximum rate of 600 cfs, and they typically occur in the rainy season when runoff from the lower San Mateo Creek watershed is also adding flow to the creek. Controlled releases have been made three or four times in the last 25 years and would be expected to occur with about the same duration and frequency with the project variant in place as they are under the existing condition. The maximum rate of controlled release with the project variant would be the same as the current maximum release, 600 cfs. Together, the minimum water release for native fishes, made through the low-flow release system, and the larger controlled release made through other valves at the base of the LCSD would not exceed 600 cfs (SFPUC, 2010d).

Several controlled releases from Crystal Springs Reservoir might be expected in a 38-year period, and they would be most likely to occur during large storms when storm runoff is also contributing considerable volumes of flow to lower San Mateo Creek. Flow in the creek would be the sum of the controlled release and flow produced by storm runoff. Thus, when a controlled release is made, flow in the creek above the Polhemus Creek confluence, below the Polhemus Creek confluence, and at San Francisco Bay might reach 640 cfs, 760 cfs, and 1,040 cfs, respectively. These maximum flows, which might be expected to occur once in a 38-year period, are the same as under baseline conditions and would be unchanged with either the project or the project variant in place.

An uncontrolled spill over the dam spillway can occur when a very large and unexpected storm occurs over the Crystal Springs Reservoir watershed. Runoff from the storm fills the reservoir reservation set aside to accommodate storm runoff, and controlled releases to lower San Mateo

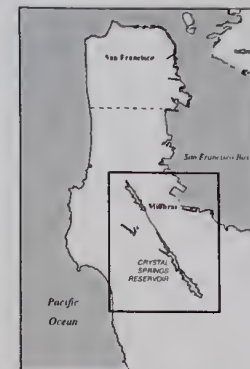


Project Site



A + Orion; USGS 1978

Lower Crystal Springs Dam Improvements Project
Figure C&R 3-1
 Peninsula Watershed Facilities and Creeks



★ LCSDI Project Site



SOURCE: ESA + Orion; USGS 1978

Lower Crystal Springs Dam Improvements Project
Figure C&R 3-1
 Peninsula Watershed Facilities and Creeks

Creek and transfer of water to San Andreas Reservoir are insufficient to keep the water surface elevation in the reservoir below the elevation of the spillway crest. The rate of flow over the spillway depends on the size of the storm, but it would likely exceed the maximum rate of controlled release on occasion.

Uncontrolled spills are rare; none have occurred in the last 25 years (SFPUC, 2010d). If an uncontrolled spill occurred in the future, the proposed minimum water releases under the project variant might add 3 to 17 cfs to creek flow immediately below the LCSD. However, future reservoir operations with the project variant, as with the proposed project, would reduce the frequency of uncontrolled spills compared to the existing condition. Under the existing condition, the SFPUC lowers the water surface elevation in Crystal Springs Reservoir to about 4 feet below the spillway crest elevation in the rainy season. This provides an approximately 2 billion gallon reservation in the reservoir to accommodate runoff from large winter storms. In the future, with the proposed project and the project variant, the SFPUC would lower the water surface elevation in the reservoir to about 8 feet below the spillway crest elevation in the rainy season. Because this would provide about twice the storage for runoff from very large storms as is provided under the existing condition, uncontrolled spills would be even rarer and of a lesser magnitude than under the existing condition. The reduction in frequency and magnitude of uncontrolled spills attributable to increased reservoir storage would more than offset any small increase in volume of the uncontrolled spills attributable to the minimum water release schedule.

In summary, compared to existing conditions, the proposed minimum water release schedule would increase dry-weather flow in lower San Mateo Creek immediately below the LCSD by a little over 2 cfs with the future elimination of pipe leakage. During storms that do not result in a release or spill from Crystal Springs Reservoir, the water release schedule could increase peak flows by 3 to 17 cfs, although when flooding threatens, the SFPUC has the discretion to stop releasing water for fish, provided stormwater runoff is producing enough water to meet the minimum water release requirements (SFPUC, 2010b). The dry-weather flows and the peak flows with the minimum water releases for native fishes would remain within the range of flows currently experienced in lower San Mateo Creek and would not represent a substantial hydrologic change. During storms that necessitate a controlled release, the maximum release would be 600 cfs including the minimum water release, the same as it is under the existing condition. Operation of the project variant would not alter the overall pattern of flow in lower San Mateo Creek, with minimal flow in the drier months, high flows in the rainy season and the greatest flows when releases are being made, or spills occur at Crystal Springs Reservoir. Therefore, operation of the project variant would have a *less-than significant* impact on stream hydrology and flows in lower San Mateo Creek.

Flooding

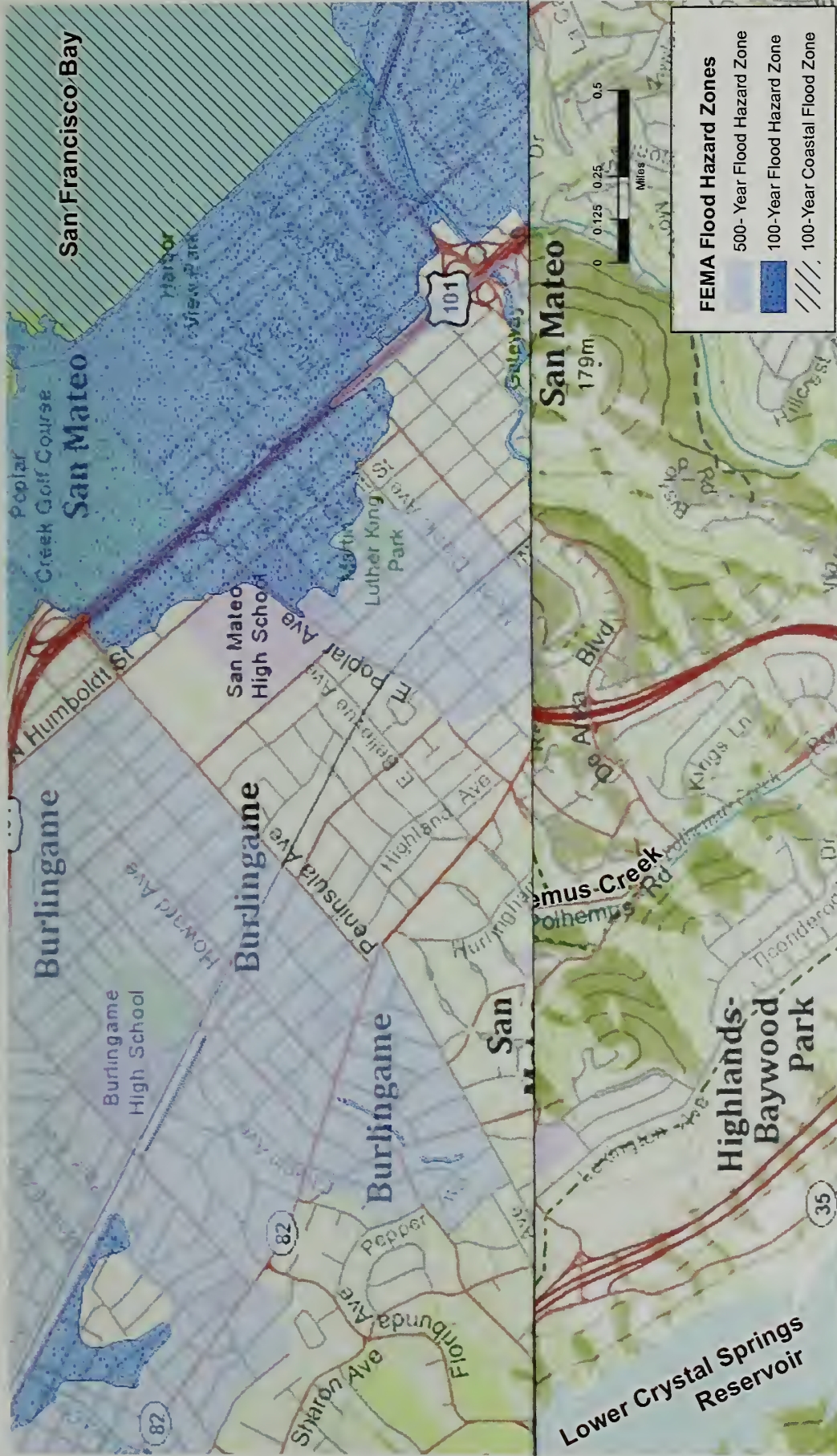
Flooding can occur along lower San Mateo Creek under certain circumstances. Flooding is generally limited to the flatter reaches of the creek east of El Camino Real in the City of San Mateo. The risk of flooding in the City of San Mateo is greatest when a high tide and a large storm occur at the same time. Tidal waters enter the creek from San Francisco Bay and impede the drainage of runoff from the lower San Mateo Creek watershed into the bay. Downstream drainage of runoff may also be impeded by the limited hydraulic capacity of several bridges. In

the Town of Hillsborough, San Mateo Creek flows within a fairly deep channel with a slope that is steeper than in more downstream reaches. The Federal Emergency Management Agency's (FEMA) flood insurance rate map indicates that in the Town of Hillsborough, the 100-year return frequency flood is within the creek channel and does not overflow into surrounding areas (see **Figure C&R 3-2**). The capacity of the creek channel near the Polhemus Creek confluence, just upstream of El Camino Real, and 750 feet upstream of Highway 101 is estimated to be approximately 1,000 cfs, 1,500 cfs, and 1,100 cfs, respectively (PWA, 1986; FEMA, 2008).

Under the current condition, the risk of flooding increases when the SFPUC makes a controlled release from Crystal Springs Reservoir or an uncontrolled spill over the dam spillway occurs. Controlled releases and uncontrolled spills typically occur during storms and add to the flow in lower San Mateo Creek produced by storm runoff. To minimize flood hazard, the SFPUC notifies the City of San Mateo before a controlled release is to be made from Crystal Springs Reservoir or when there is the possibility of an uncontrolled spill (SFPUC, 2008). The SFPUC also avoids releasing water at the peak of unusually high tides. These practices would continue with the project variant in place.

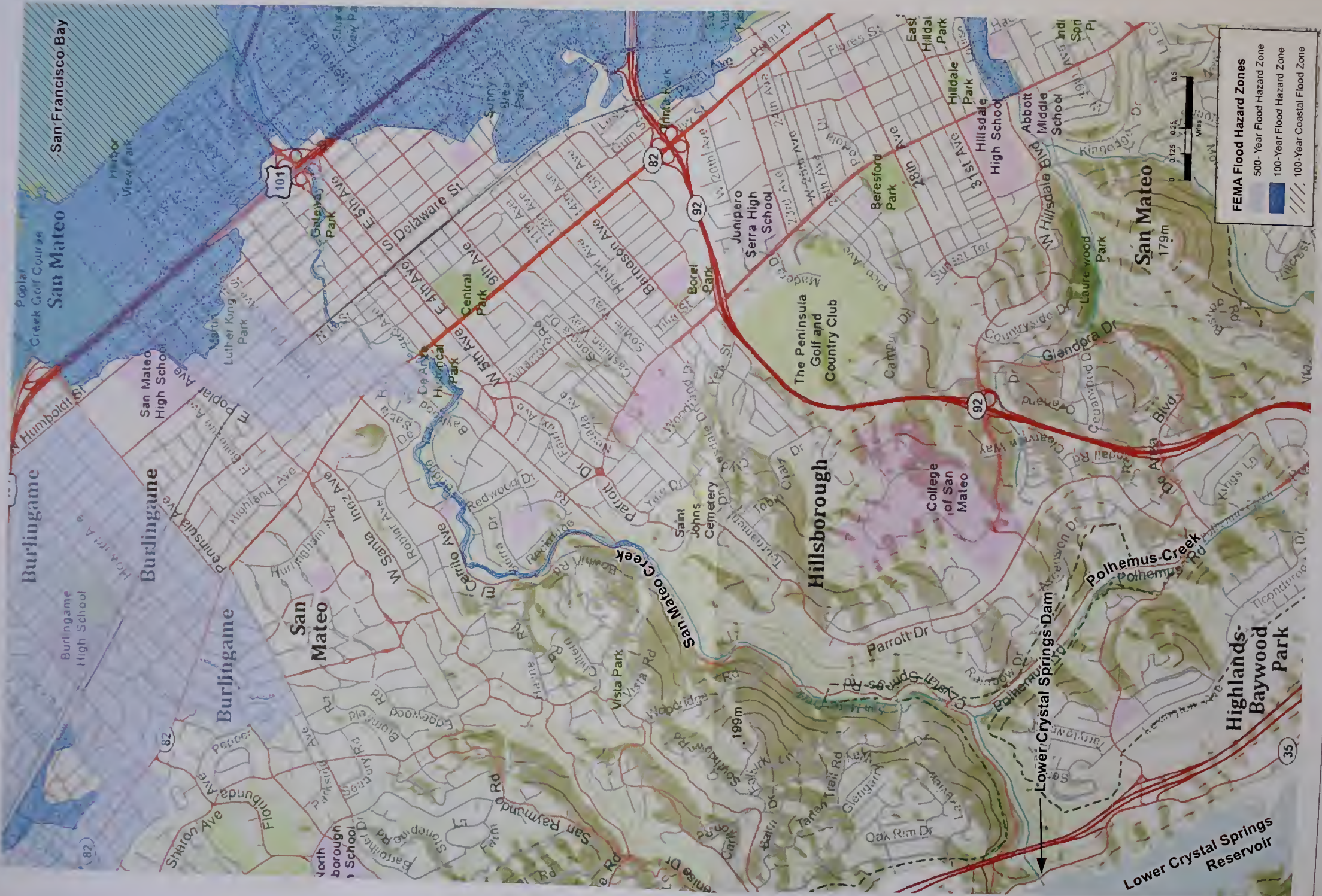
As noted above, the project variant could increase peak flows in lower San Mateo Creek by 3 to 17 cfs at times when no controlled release or uncontrolled spill is occurring at LCSD. This would be unlikely to increase flood hazard along the creek because the peak flows, augmented by the minimum water releases, would still be considerably lower than those that have historically occurred every 5 to 7 years during controlled releases and so small as to be well within the capacity of the creek channel. In addition, with the variant, the SFPUC may decrease or discontinue the minimum water release through the low-flow release system at times when the release could exacerbate downstream flooding, provided stormwater runoff is sufficient to maintain compliance with the proposed minimum water release schedule in the reach between the dam and the USGS gage (SFPUC, 2010b). Because stormwater from I-280 and the Skyline Boulevard Bridge drains to the stilling basin at the LCSD, it is likely that runoff would be sufficient to meet all or some of minimum water release schedule in many storms. Consequently, the 3 to 17 cfs increase in peak flow would likely only occur when there was no risk of flooding because whenever flooding threatened, the SFPUC would be able to decrease or discontinue the minimum water releases.

As noted above, the highest flows in lower San Mateo Creek, with the greatest potential to cause flooding, occur when the SFPUC is making a controlled release of water from Crystal Springs Reservoir or when an uncontrolled spill at the dam occurs. Because the project variant would have no effect on the highest creek flow during a controlled release, it would also have no effect on flood hazard during controlled releases. As it would with the proposed project, the project variant would reduce the frequency and magnitude of uncontrolled spills and therefore would reduce flood hazard resulting from uncontrolled spills. Therefore, similar to the proposed project, the project variant would have a *beneficial impact* on flood hazard along lower San Mateo Creek.



SFPUC Lower Crystal Springs Dam Improvements
Figure C R 3-2
 FEMA Flood Hazard Zones

SOURCE: FEMA, 2008.



SOURCE: FEMA, 2008.

SFPUC Lower Crystal Springs Dam Improvements

Figure C R 3-2
FEMA Flood Hazard Zones

Water Quality

The minimum water release element of the project variant would improve water quality in lower San Mateo Creek immediately below the LCSD and for some distance downstream of the dam during dry periods. Under the existing condition, water temperature can be expected to increase and dissolved oxygen content to decrease as water flows slowly downstream from the base of the dam. The proposed approximately four-fold increase in minimum flow during the dry season would increase the velocity of flow in the creek, reduce the rate of increase of water temperature, and help prevent oxygen-depletion during dry periods. The minimum water release element of the project variant would have no effect on water quality during wet weather. Overall, the project variant would have a *beneficial* impact on water quality in lower San Mateo Creek, unlike the proposed project, which would have a less-than-significant impact on water quality in lower San Mateo Creek; the water quality impacts on San Andreas and Laguna Creeks and Crystal Springs Reservoir would be the same as for the proposed project as described in the Draft EIR.

Groundwater and Geomorphology

Under the variant, other operational impacts related to groundwater and geomorphology would have similar effects as the proposed project as described in the Draft EIR, and the impact determination would be less-than-significant, the same as for the proposed project.

3.3.19 Hazards and Hazardous Materials

Draft EIR Section 5.16, Hazards and Hazardous Materials (pages 5.16-1 through 5.16-22), provides an assessment of potential impacts related to hazards and hazardous materials that might be present in the vicinity of the proposed project. Potential hazards addressed in the section include public exposure to naturally occurring asbestos and hazardous building materials, releases of hazardous materials during construction, and fires. Implementation of the variant would result in the same significance determinations as presented in Section 5.16. Since construction activities associated with the variant are the same as those for the proposed project, all impacts related to hazards and hazardous materials during construction would be the same as those described in the Draft EIR. Operational releases to lower San Mateo Creek associated with the variant would not require a substantial increase in the use of hazardous materials or result in any other impacts related to hazards listed above. Further, other operation and maintenance activities associated with the variant would be the same as those described in the Draft EIR; therefore, operational impacts related to hazards and hazardous materials would be the same as those presented in the Draft EIR. Implementation of the variant would result in the same potential impacts on hazards and hazardous materials as the proposed project, and the same mitigation measure would be required.

3.3.20 Mineral and Energy Resources

Draft EIR Section 5.17, Mineral and Energy Resources (pages 5.17-1 through 5.17-), analyzes the potential for adverse impacts on mineral and energy resources that could occur during construction and operation of the proposed project. Implementation of the variant would result in the same significance determinations as presented in Section 5.17. Since construction activities

associated with the variant are the same as those for the proposed project, all impacts related to construction-related energy use would be the same as those described in the Draft EIR. Implementation of the variant would result in an increase of operational flows in lower San Mateo Creek. However, an increase in operational flows would not affect mineral resources or result in impacts related to the use of large amounts of fuel or energy (, given that no pumping is required to release the water, which flows by gravity, and only a small amount of electricity would be required to operate the valves). All other operation and maintenance activities associated with the variant would be the same as those described in the Draft EIR; therefore, similar to the proposed project, the variant would not result in additional impacts related to the use of large amounts of fuel, water, or energy, nor would it use these resources in a wasteful manner during operation.

3.3.21 Agricultural Resources

EIR Section 5.18 (pages 5.18-1 through 5.18-3) analyzes the potential impacts on agricultural resources that could occur during construction and operation of the proposed project and assesses the potential for project implementation to adversely affect such resources. As described in Section 5.18, Agricultural Resources, the proposed project would not be located on land used for agricultural activities nor is the land zoned for agricultural use; therefore implementation of the proposed project would not result in impacts related to agricultural resources. Likewise, since the variant would be located at the same project sites identified in the Draft EIR, implementation of the variant would not result in impacts related to agricultural resources.

3.3.22 Summary of Environmental Effects

In summary, the LCSDI variant would result in all the same the construction impacts and essentially the same operational impacts as those presented for the proposed project in the Draft EIR. Mitigation measures for the variant would also be the same as those identified for the proposed project in the Draft EIR (Chapter 6). The variant would not result in any new or more severe impacts than those previously disclosed in the Draft EIR, and in the case of riparian, aquatic, and fishery resources and water quality in lower San Mateo Creek, the variant would result in a beneficial effect compared to existing conditions and the proposed project. With the exception of these beneficial impacts on riparian, aquatic, and fishery resources and water quality, all impact conclusions presented in the Draft EIR and identified mitigation measures are applicable to the LCSDI Variant. In addition, the LCSDI Variant would not affect or require any changes to the No Project Alternative or range of alternatives already addressed in the Draft EIR.

Table C&R 3-5 provides a comparison of impacts and mitigation measures applicable to the proposed project with those applicable to the LCSDI Variant.

TABLE C&R 3-5
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.2: Land Use and Land Use Planning				
Impact LU-1: Temporary disruption or displacement of existing land uses during construction.	PSM	PSM	PSM	PSM
<i>Mitigation Measures</i>				
M-LU-1a: Neighborhood Notice	X	X	X	X
M-LU-1b: Event Scheduling at the Pulgas Water Temple	--	X	--	X
M-TR-1: Traffic Control Plan	X	--	X	--
M-NO-1: Administrative and Source Controls	X	--	X	--
M-NO-4: Blasting Noise Controls	X	--	X	--
M-AQ-1a: Dust Control Measures	X	X	X	X
M-AQ-1b: Exhaust Control Measures	X	X	X	X
M-AQ-1c: Additional Exhaust Control Measures	X	X	X	X
Impact LU-2: Permanent displacement or long-term disruption of existing land uses.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-LU: Cumulative disruption of established communities and changes in existing land use patterns.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.3: Aesthetics				
Impact AE-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the site and its surroundings.	PSM	N/A	PSM	N/A
<i>Mitigation Measures</i>				
M-AE-1: Landscaping Plan	X	--	X	--
Impact AE-2: Effects of light or glare during nighttime construction.	PSM	N/A	PSM	N/A
<i>Mitigation Measures</i>				
M-AE-2: Site-Specific Construction Lighting Plan and Complaint Line	X	--	X	--
Impact AE-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the site and its surroundings.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.3: Aesthetics (cont.)				
Impact AE-4: Long-term visual effects due to inundation of shoreline woodlands.	PSU	N/A	PSU	N/A
<i>Mitigation Measures</i>				
M-AE-4: Tree Removal Plan	X	--	X	--
M-BI-1a: Worker Training Program	X	--	X	--
M-BI-1b: Avoidance and Restoration	X	--	X	--
M-BI-2: Individual Tree Replacement	X	--	X	--
M-BI-3c: Biological Monitoring	X	--	X	--
M-BI-3d: Preconstruction Surveys and Avoidance of Nesting Birds	X	--	X	--
M-BI-3g: General Avoidance Measures	X	--	X	--
M-HY-3: Preparation and Implementation of a SWPPP	X	--	X	--
Impact C-AE: Cumulative impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the site and its surroundings.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.4: Population and Housing				
No impacts related to growth-inducement and housing.	N/A	N/A	N/A	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.5: Cultural and Paleontological Resources				
Impact CP-1: Design and construction effects on the integrity of a historic resource.	SU	N/A	SU	N/A
<i>Mitigation Measures</i>				
M-CP-1a: HAER Recordation and Public Interpretation	X	--	X	--
M-CP-1b: Historic Resources Protection Plan	X	--	X	--
Impact CP-2: Design and construction effects on a historic district.	N/A	N/A	N/A	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact CP-3: Construction impacts on unrecorded archaeological resources.	PSM	PSM	PSM	PSM
<i>Mitigation Measures</i>				
M-CP-3: Procedures Addressing Inadvertent Discovery of Archaeological Resources	X	X	X	X

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.5: Cultural and Paleontological Resources (cont.)				
Impact CP-4: Construction impacts on paleontological resources.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-CP-4: Procedures Addressing Unanticipated Discovery of a Paleontological Resource	X	--	X	--
Impact CP-5: Construction impacts on human remains, including those interred outside of formal cemeteries.	PSM	PSM	PSM	PSM
<i>Mitigation Measures</i>				
M-CP-5: Procedures Addressing Inadvertent Discovery of Human Remains	X	X	X	X
Impact CP-6: Effects of project operations on historic, archaeological, or paleontological resources or human remains	PSM	N/A	PSM	N/A
<i>Mitigation Measures</i>				
M-CP-6: Conduct a Geotechnical Study to Evaluate the Condition of the Retaining Wall, and if Necessary, Relocate and Extend the South Crystal Springs Cottage Retaining Wall.	X	--	X	--
Impact C-CP: Cumulative impacts on cultural resources.	SU	N/A	SU	N/A
<i>Mitigation Measures</i>				
M-CP-1a: HAER Recordation and Public Interpretation	X	--	X	--
Section 5.6: Transportation and Circulation				
Impact TR-1: Temporary reduction in roadway capacity and increases in traffic delays.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-TR-1: Traffic Control Plan	X	--	X	--
Impact TR-2: Short-term traffic increases on roadways due to construction-related vehicle trips.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-TR-1: Traffic Control Plan	X	--	X	--
Impact TR-3: Impaired access to adjacent roadways and land uses.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-TR-1: Traffic Control Plan	X	--	X	--
Impact TR-4: Temporary displacement of on-street parking at some locations due to increased parking demand or construction within roadways.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.6: Transportation and Circulation (cont.)				
Impact TR-5: Increased potential traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-TR-1: Traffic Control Plan	X	--	X	--
Impact TR-6: Increases in vehicle trips to and from project facilities for operation and maintenance.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-TR: Cumulative traffic increases on local and regional roads.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-C-TR: Coordinated Peninsula Regional Transportation Management Plan	X	--	X	--
Section 5.7: Noise and Vibration				
Impact NO-1: Disturbance from temporary, construction-related, on-site noise increases.	SU	PSM	SU	PSM
<i>Mitigation Measures</i>				
M-NO-1: Administrative and Source Controls	X	--	X	--
M-LU-1b: Event Scheduling at the Pulgas Water Temple	--	X	--	X
Impact NO-2: Consistency with noise ordinance limits.	SM	LS	SM	LS
<i>Mitigation Measures</i>				
M-NO-1: Administrative and Source Controls	X	--	X	--
Impact NO-3: Temporary noise disturbance along construction haul routes.	SU	LS	SU	LS
<i>Mitigation Measures</i>				
None feasible.	--	--	--	--
Impact NO-4: Noise disturbance due to construction-related blasting.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-NO-4: Blasting Noise Controls	X	--	X	--
Impact NO-5: Temporary disturbance due to construction-related vibration.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.7: Noise and Vibration (cont.)				
Impact NO-6: Disturbance due to noise and vibration increases associated with the operation of project facilities.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-NO: Cumulative increases in construction noise in the LCSD vicinity and along construction haul and delivery routes.	PSU	LS	PSU	LS
<i>Mitigation Measures</i>				
M-C-NO: Coordinated Noise Control Plan	X	--	X	--
Section 5.8: Air Quality¹				
Impact AQ-1: Construction emissions of criteria pollutants.	PSM/SU	PSM/SU	PSM/SU	PSM/SU
<i>Mitigation Measures</i>				
M-AQ-1a: Dust Control Measures	X	X	X	X
M-AQ-1b: Exhaust Control Measures	X	X	X	X
M-AQ-1c: Additional Exhaust Control Measures	X	X	X	X
Impact AQ-2: Generation of diesel particulate matter (DPM) and toxic air contaminants (TACs) during construction.	LS/LS	LS/LS	LS/LS	LS/LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact AQ-3: Odors generated during project construction.	LS/LS	LS/LS	LS/LS	LS/LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact AQ-4: GHG construction emissions and conflicts with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.	LS/LS	LS/LS	LS/LS	LS/LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact AQ-5: Air pollutant and odor emissions during project operation.	LS/LS	LS/LS	LS/LS	LS/LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--

¹ For all Air Quality impacts, two significance determinations are provided. The first determination is based on evaluation with the 1999 BAAQMD guidelines and the second is based on evaluation with 2010 BAAQMD CEQA Air Quality Guidelines.

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.8: Air Quality (cont.)				
Impact AQ-6: GHG operational emissions and conflicts with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.	LS/LS	N/A	LS/LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-AQ: Cumulative construction emissions of criteria pollutants, toxic air contaminants, and greenhouse gas emissions.	LS/SU	LS/SU	LS/SU	LS/SU
<i>Mitigation Measures</i>				
M-AQ-1a: Dust Control Measures	X	X	X	X
M-AQ-1b: Exhaust Control Measures	X	X	X	X
M-AQ-1c: Additional Exhaust Control Measures	X	X	X	X
Section 5.9: Wind and Shadow				
No impacts related to wind and shadow.	N/A	N/A	N/A	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.10: Recreation				
Impact RE-1: Temporary conflicts with established recreational resources during construction.	SM	LS	SM	LS
<i>Mitigation Measures</i>				
M-RE-1: Notify Bicycle Organizations of Detours	X	--	X	--
M-NO-1: Administrative and Source Controls	X	--	X	--
M-AQ-1a: Dust Control Measures	X	X	X	X
M-AQ-1b: Exhaust Control Measures	X	X	X	X
M-AQ-1c: Additional Exhaust Control Measures	X	X	X	X
M-TR-1: Traffic Control Plan	X	--	X	--
M-LU-1b: Event Scheduling at the Pulgas Water Temple	--	X	--	X
Impact RE-2: Conflicts with established recreational uses due to facility siting and project operation.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
M-AE-4: Tree Removal Plan	X	X	X	X

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.10: Recreation (cont.)				
Impact C-RE: Cumulative effects on recreational resources during construction.	SU	LS	SU	LS
<i>Mitigation Measures</i>				
M-LU-1b: Event Scheduling at Pulgas Water Temple	--	X	--	X
M-TR-1: Traffic Control Plan	X	--	X	--
M-C-TR: Coordinated Peninsula Regional Transportation Management Plan	X	--	X	--
M-RE-1: Notify Bicycle Organizations of Detours	X	--	X	--
M-AQ-1a: Dust Control Measures	X	X	X	X
M-AQ-1b: Exhaust Control Measures	X	X	X	X
M-AQ-1c: Additional Exhaust Control Measures	X	X	X	X
M-NO-1: Administrative and Source Controls	X	--	X	--
M-C-RE: Coordinate Trail Access for Sawyer Camp Trail during Construction	X	--	X	--
Section 5.11: Utilities and Service Systems				
Impact UT-1: Potential temporary damage to or disruption of existing regional and local utilities.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-UT-1: Coordinate Final Construction Plans with Affected Utilities	X	--	X	--
Impact UT-2: Impacts related to the relocation of utilities.	PSM	N/A	PSM	N/A
<i>Mitigation Measures</i>				
M-UT-1: Coordinate Final Construction Plans with Affected Utilities	X	--	X	--
Impact UT-3: Temporary adverse effects on solid waste landfill capacity.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact UT-4: Impacts related to compliance with federal, state, and local solid waste statutes.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-UT-4: Waste Management Plan	X	--	X	--
Impact UT-5: Long-term effects on utilities and service systems.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.11: Utilities and Service Systems (cont.)				
Impact C-UT: Cumulative impacts on utilities and service systems.	N/A	N/A	N/A	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.12: Public Services				
No impacts related to public services.	N/A	N/A	N/A	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.13: Biological Resources				
Impact BI-1: Construction impacts on wetlands, aquatic resources, and riparian habitat.	SM	SM	SM	SM
<i>Mitigation Measures</i>				
M-BI-1a: Worker Training Program	X	X	X	X
M-BI-1b: Avoidance and Restoration	X	X	X	X
M-BI-1c: Wetlands Creation and Enhancement for Construction and Operational Impacts	X	X	X	X
M-HY-3: Preparation and Implementation of a SWPPP	X	X	X	X
Impact BI-2: Construction impacts on sensitive habitats, common habitats, and county-designated significant trees.	SM	LS	SM	LS
<i>Mitigation Measures</i>				
M-BI-2: Tree Replacement	X	--	X	--
M-BI-1a: Worker Training Program	X	--	X	--
M-BI-1b: Avoidance and Restoration	X	--	X	--
M-BI-3g: General Avoidance Measures	X	--	X	--
Impact BI-3: Construction impacts on special-status species—direct mortality and/or habitat effects.	SM	SM	SM	SM
<i>Mitigation Measures</i>				
M-BI-3a: Frog Relocation	X	--	X	--
M-BI-3b: Exclusion Fence	X	--	X	--
M-BI-3c: Biological Monitor	X	X	X	X
M-BI-3d: Preconstruction Surveys and Avoidance of Nesting Birds	X	X	X	X
M-BI-3e: Avoidance of Roosting Bats	X	--	X	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.13: Biological Resources (cont.)				
M-BI-3f: Preconstruction Surveys and Avoidance of Woodrat Middens during Breeding	X	--	X	--
M-BI-3g: General Avoidance Measures	X	X	X	X
M-BI-1a: Worker Training Program	X	X	X	X
M-BI-1b: Avoidance and Restoration	X	X	X	X
M-BI-1c: Wetlands Creation and Enhancement for Construction and Operational Impacts	X	--	X	--
Impact BI-4: Construction water discharge effects on riparian and/or aquatic resources.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact BI-5: Conflicts with local policies or ordinances protecting biological resources due to construction impacts.	SM	LS	SM	LS
<i>Mitigation Measures</i>				
M-BI-2: Tree Replacement	X	--	X	--
M-BI-1a: Worker Training Program	X	--	X	--
Impact BI-6: Operational impacts on wetlands and aquatic resources.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-BI-1a: Worker Training Program	X	--	X	--
M-BI-1b: Avoidance and Restoration	X	--	X	--
M-BI-1c: Wetland Creation and Enhancement for Construction and Operational Effects	X	--	X	--
Impact BI-7: Operational impacts on sensitive habitats, common habitats, and significant trees.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-BI-7a: Serpentine Grassland Enhancements	X	--	X	--
M-BI-7b: Oak Woodland Mitigation Program	X	--	X	--
Impact BI-8: Operational impacts on special-status species—direct mortality and/or habitat effects.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-BI-1a: Worker Training Program	X	--	X	--
M-BI-1c: Wetland Creation and Enhancement for Construction and Operational Effects	X	--	X	--
M-BI-7a: Serpentine Grassland Enhancements	X	--	X	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.13: Biological Resources (cont.)				
M-BI-7b: Oak Woodland Mitigation Program	X	--	X	--
M-BI-8a: Listed and Nonlisted Special-status Plants	X	--	X	--
M-BI-8b: Scrub and Grassland Enhancement for Upland Refugia	X	--	X	--
M-BI-8c: Predator (Bullfrog) Control	X	--	X	--
Impact BI-9: Operational water discharge effects on riparian and/or aquatic resources.	LS	N/A	B	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact BI-10: Conflicts with local policies or ordinances protecting biological resources due to proposed operations.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-BI-7b: Oak Woodland Mitigation Program	X	--	X	--
Impact C-BI: Cumulative loss of sensitive biological resources during construction and operation.	PSM	PSM	PSM	PSM
<i>Mitigation Measures</i>				
M-C-BI: Coordination of Exclusion Fence and Biological Monitoring	X	X	X	X
M-BI-3b: Exclusion Fence	X	X	X	X
M-BI-3c: Biological monitoring	X	X	X	X
Impact BI-11: Construction impacts on fisheries due to water quality effects from increased sediment and turbidity and contaminant releases.	PSM	N/A	PSM	N/A
<i>Mitigation Measures</i>				
M-BI-1a: Worker Training Program	X	--	X	--
M-BI-1b: Avoidance and Restoration	X	--	X	--
M-HY-3: Preparation and Implementation of a SWPPP	X	--	X	--
Impact BI-12: Disturbance and direct injury to steelhead from construction.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-BI-12a: Fish Rescue and Relocation	X	--	X	--
M-BI-12b: Vibration Monitoring	X	--	X	--
M-BI-1a: Worker Training Program	X	--	X	--
M-BI-1b: Avoidance and Restoration	X	--	X	--
M-BI-3b: Exclusion Fence	X	--	X	--
M-BI-3c: Biological monitor	X	--	X	--
M-BI-3g: General Avoidance Measures	X	--	X	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.13: Biological Resources (cont.)				
Impact BI-13: Loss of riparian vegetation, shaded riverine aquatic cover, and aquatic habitat area.	SM	N/A	SM	N/A
<i>Mitigation Measures</i>				
M-BI-13: Enhancement of Existing Fisheries Habitat	X	--	X	--
Impact BI-14: Reduction in streamflows downstream of construction area	LS	N/A	B	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact BI-15: Inundation of approximately 1,500 linear feet of riverine habitat.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C2-BI: Cumulative impacts on fisheries.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.14: Geology and Soils				
Impact GE-1: Slope instability during construction.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required	--	--	--	--
Impact GE-2: Erosion and loss of topsoil.	PSM	LS	PSM	LS
<i>Mitigation Measures</i>				
M-GE-2: Replacement of Topsoil	X	--	X	--
Impact GE-3: Surface fault rupture.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact GE-4: Seismically induced groundshaking.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact GE-5: Seismically induced ground failure, including liquefaction, lateral spreading, and settlement.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.14: Geology and Soils (cont.)				
Impact GE-6: Seismically induced landslides or other slope failures.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-GE: Cumulative impacts on geology, soils, and seismicity.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.15: Hydrology and Water Quality				
Impact HY-1: Construction-related impacts on flow along lower San Mateo Creek.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HY-2: Construction-related impacts on ground water levels in the vicinity of Crystal Springs Reservoir and the LCSD.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HY-3: Construction-related impact on water quality in Crystal Springs Reservoir and along lower San Mateo Creek.	PSM	PSM	PSM	PSM
<i>Mitigation Measures</i>				
M-HY-3: Preparation and Implementation of a SWPPP	X	X	X	X
Impact HY-4: Construction-related impacts on the geomorphology along San Mateo Creek, San Andreas, and Laguna Creeks.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HY-5: Long-term effects on flow along lower San Mateo Creek.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HY-6: Increased flood hazards along lower San Mateo Creek during project operations.	B	N/A	B	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.15: Hydrology and Water Quality (cont.)				
Impact HY-7: Long-term effects on groundwater levels and quality in the vicinity of Crystal Springs Reservoir and the LCSD.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HY-8: Long-term impacts on water quality in San Mateo, San Andreas, and Laguna Creeks, and Crystal Springs Reservoir.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HY-9: Operational effects on the geomorphology along San Mateo, San Andreas, and Laguna Creeks.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-HY: Cumulative impacts on water quality and hydrology.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.16: Hazards and Hazardous Materials				
Impact HZ-1: Potential to encounter hazardous materials in soil and groundwater.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HZ-2: Exposure to naturally occurring asbestos.	SM	LS	SM	LS
<i>Mitigation Measures</i>				
M-HZ-2a: Conduct Investigation for Naturally Occurring Asbestos	X	--	X	--
M-HZ-2b: Asbestos Dust Mitigation Plan	X	--	X	--
Impact HZ-3: Exposure to hazardous building materials.	SM	LS	SM	LS
<i>Mitigation Measures</i>				
M-HZ-3: Implement DTSC Alternative Management Standards for Treated Wood Waste	X	--	X	--
Impact HZ-4: Accidental hazardous materials release from construction equipment.	PSM	PSM	PSM	PSM
<i>Mitigation Measures</i>				
M-HY-3: Preparation and Implementation of a SWPPP	X	X	X	X

TABLE C&R 3-5 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES
FOR THE PROPOSED PROJECT AND THE LCSDI VARIANT

IMPACT	Proposed Project		LCSDI Variant	
	LCSD Site	Sampling Station Site	LCSD Site	Sampling Station Site
Section 5.16: Hazards and Hazardous Materials (cont.)				
Impact HZ-5: Risk of fires during construction.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HZ-6: Fire and safety hazards from the use of explosives during construction.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact HZ-7: Operational impacts related to hazards and hazardous materials.	LS	N/A	LS	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-HZ: Cumulative impacts related to hazards and hazardous materials.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Section 5.17: Mineral and Energy Resources				
Impact ME-1: Construction-related energy use.	LS	LS	LS	LS
<i>Mitigation Measures</i>				
None required.	--	--	--	--
Impact C-ME: Cumulative impacts on energy use.	LS	LS	LS	LS
None required.	--	--	--	--
Section 5.18: Agricultural Resources				
No impacts related to agricultural resources.	N/A	N/A	N/A	N/A
<i>Mitigation Measures</i>				
None required.	--	--	--	--

3.4 References – Project Variant

- Federal Emergency Management Agency (FEMA), *Flood Insurance Study (FIS) for San Mateo County and Incorporated Areas Volumes 1 and 2*. Flood Insurance Number 060581CV001A and 060581CV001B, 2008.
- Philip Williams and Associates (PWA) *San Mateo Creek Feasibility Study, Hydrology and Flooding*, 1986.
- San Francisco Planning Department, Final Program Environmental Impact Report for the San Francisco Public Utilities Commission's Water System Improvement Program, MEA File No. 2005.0159E, SCH# 2005092026, certified October 30, 2008.
- San Francisco Planning Department, *Environmental Impact Report on San Francisco Public Utilities Commission Crystal Springs/San Andreas Transmission Upgrade Project*. MEA Case No. 2007.1255E, SCH No. 2008022054, Certified April 22, 2010a.
- San Francisco Planning Department, *Addendum to Environmental Impact Report on San Francisco Public Utilities Commission Crystal Springs/San Andreas Transmission Upgrade Project*. MEA Case No. 2007.1255E, SCH No. 2008022054, September 1, 2010b.
- San Francisco Public Utilities Commission (SFPUC), Water Supply & Treatment Division, *Crystal Springs Dam Emergency Action Plan*, November 1999 with Chapter 2 update, 2008.
- San Francisco Public Utilities Commission (SFPUC), *Lower San Mateo Creek Aquatic Resource Evaluation*, Prepared by Water Enterprise, Natural Resources and Lands Management Division, Fisheries and Wildlife Section, Sunol, CA, June 1, 2010a.
- San Francisco Public Utilities Commission (SFPUC), Letter and enclosures from Steven R. Ritchie, Assistant General Manager, Water Enterprise to Jane Hicks, Regulatory Branch Chief, U.S. Army Corps of Engineers, regarding *Lower Crystal Springs Dam Improvements Project and Crystal Springs-San Andreas System Transmission Upgrade Project, Project Updates, San Mateo County, California: Corps File No. 400143S/30317S*, including three enclosures: *San Mateo Creek Minimum Water Release Schedule, San Mateo Creek Aquatic Resource Monitoring Plan, and Revised Conservation Measures 8 and 10*, July 16, 2010b.
- San Francisco Public Utilities Commission (SFPUC), Letter and enclosures from Steven R. Ritchie, Assistant General Manager, Water Enterprise, to Jane Hicks, Regulatory Branch Chief, U.S. Army Corps of Engineers, regarding *Calaveras Dam Replacement Project, Project Updates, Alameda and Santa Clara Counties, Corps File No. 29979S*, including two enclosures: *Final Instream Flow Schedules to be included in the Calaveras Dam Replacement Project Biological Assessment and Calaveras Dam Replacement Project Adaptive Management Implementation Plan for Central California Coast Steelhead*; July 16, 2010c.
- San Francisco Public Utilities Commission (SFPUC), Memorandum from Steven R. Ritchie, Assistant General Manager, Water Enterprise, to Harlan Kelly, Assistant General Manager, Infrastructure Division, and Julie Labonte, Water System Improvement Program Director, regarding *Operations of Crystal Springs Reservoir Before and After Lower Crystal Springs Dam Improvements Project and Minimum Instream Flow Requirements for San Mateo Creek*, July 29, 2010d.
- San Francisco Public Utilities Commission (SFPUC), Memorandum from Steven R. Ritchie, Assistant General Manager, Water Enterprise, to Kelley Capone, regarding *Water Supply Effects of Alameda Creek and San Mateo Creek Fishery Flows*, August 10, 2010e.

San Francisco Public Utilities Commission (SFPUC), Email from Kelley Capone, Deputy Bureau Manager, Bureau of Environmental Management, to Diana Sokolove, San Francisco Planning Department regarding *Clarification on Drought Rationing Calculation*, August 18, 2010f.

CHAPTER 4

Comments and Responses

This chapter presents verbatim text of the substantive comments received on the Draft EIR and responses to those comments. The comments and responses are organized by subject and are generally in the same order as presented in the Draft EIR, with general comments on the EIR or proposed project grouped together at the beginning of the chapter. Comments on the summary chapter or on mitigation measures are included in the relevant section of the Draft EIR. The order of the comments and responses is shown below, along with the topical codes indicated in square brackets:

- | | |
|--|--|
| 4.1 General Comments [G] | 4.13 Wind and Shadow [W] |
| 4.2 Introduction and Background [INT] | 4.14 Recreation [R] |
| 4.3 Project Description [PD] | 4.15 Utilities and Service Systems [U] |
| 4.4 Plans and Policies [PP] | 4.16 Public Services [P] |
| 4.5 Land Use [L] | 4.17 Biological Resources [B] |
| 4.6 Aesthetics [A] | 4.18 Geology and Soils [GS] |
| 4.7 Population and Housing [PH] | 4.19 Hydrology and Water Quality [H] |
| 4.8 Cultural and Paleontological Resources [C] | 4.20 Hazards and Hazardous Materials [HM] |
| 4.9 Transportation and Circulation [T] | 4.21 Mineral and Energy Resources [M] |
| 4.10 Noise and Vibration [N] | 4.22 Agriculture and Forest Resources [AF] |
| 4.11 Air Quality [AQ] | 4.23 Other CEQA Issues [O] |
| 4.12 Greenhouse Gases [GG] | 4.24 Alternatives [AL] |

Within each topic area, similar comments are grouped together and numbered sequentially. For example, General Comments [G] are listed as [G1], [G2], [G3], etc. beneath a header that introduces the comment subject, followed by a list of the comments included. Following each comment, the agency, organization, or individual that submitted the comment is identified in *italics*. Multiple comments grouped together under one subject number are listed alphabetically by category in the following order: Agency (Federal, State, Local), Organization, and Individual. **Appendices C&R A** and **C&R B** present the comment letters and public hearing transcripts in their entirety, with margin notes showing the bracketing used for individual comments and the corresponding topical code to indicate where commenters can locate the responses to their comments.

In addition to the topical code, each bracketed comment is assigned a unique comment identifier code that corresponds to the type of commenter (i.e., Agency [A], Organization [O], or Individual [I]); an acronym for the agency or organization (or, in the case of individuals, their last name); and the sequentially numbered, bracketed comment from that commenter. These unique comment identifier codes are used as a cross-reference to the topical codes.

Following each comment or group of comments, a comprehensive response is provided to address issues raised in the comments and to clarify or augment information in the Draft EIR as appropriate. The responses provide clarification of the Draft EIR text and may also include revisions or additions to the Draft EIR. Revisions to the Draft EIR are shown as indented text. New or revised text is double underlined; deleted material is shown in ~~strike-out~~. In some cases, where a comment addresses more than one topical subject, the response includes a cross-reference to other responses. Response numbers correspond to the comment numbers; for example, the response to Comment G1 is referred to as Response G1.

4.1 General Comments

The comments and corresponding responses in this section cover general subjects not directly related to a specific section of the Draft EIR, although in some cases they address a number of interrelated topics discussed in various sections of the Draft EIR. This section begins with a master response on dam safety issues related to Lower Crystal Springs Dam (LCSD). Master responses provide comprehensive and cohesive responses to similar concerns raised by multiple commenters to avoid unnecessary repetition in individual responses. Master responses also address interrelated issues in a broader context than might be addressed in individual responses. When issues are addressed in this broader context, the relationships between the individual issues raised can be explained more clearly. The master response on dam safety is followed by individual comments and responses on other general subjects. As appropriate, responses to individual comments refer to the appropriate subsections of the master response on dam safety.

Table C&R 4.1-1 presents the master response subsections, individual responses, and the specific comments addressed in this section.

4.1.1 Master Response on Lower Crystal Springs Dam Safety Issues

This master response addresses the multiple and interrelated comments concerning the safety of LCSD and how implementation of the proposed project would affect the safety of the dam. Safety concerns include seismic and flooding hazards as well as overall risk of dam failure. This discussion is intended to respond to issues raised by commenters and to augment the discussion provided in the Draft EIR; it does not change the analysis or conclusions presented in the Draft EIR.

This master response is divided into the following subsections:

- Purpose and Need of the Proposed Project
- Design of Lower Crystal Springs Dam
- Dam Safety Under Existing Conditions
- Dam Safety Under Proposed Project Conditions

TABLE C&R 4.1-1
INDEX OF RESPONSES TO COMMENTS – GENERAL COMMENTS

RESPONSE	COMMENT																								
	A_CDFG-01	A_CDFG-02	A_DSOD-01	A_RWQCB-03	A_Hillsb-01	A_Hillsb-02	A_Hillsb-03	A_Hillsb-06	A_Hillsb-07	A_HillsCSD-01	A_HillsCSD-02	A_HillsCSD-03	A_SFPC1-01	A_SFPC3-01	O_CNPS1-01	I_Bardet-01	I_Bardet-02	I_Bardet-03	I_Cooperman1-01	I_Cooperman1-03	I_Cooperman1-04	I_Cooperman1-05	I_Cooperman1-06	I_Cooperman1-07	I_Cooperman1-08
MASTER RESPONSE																									
Master Response, Lower Crystal Springs Dam Safety Issues																									
Purpose and Need for the Proposed Project	X					X								X											
Design of Lower Crystal Springs Dam																									
Dam Safety Under Existing Conditions								X			X									X					
Proposed Safety Under Proposed Project Conditions	X	X	X	X	X	X	X			X						X	X	X	X						
Individual Comments and Responses																									
G1, Request for Seismic Studies								X																	
G2, Division of Safety of Dams Contact																									
G3, Age of Dam																									
G4, Crystal Springs Dam Emergency Action Plan																									
G5, Project Cost of Multiple Shifts																									
G6, Cost of Seismic Studies																									
G7, Water Revenues																									
G8, Opinion Against the Project																									
G9, Request for Internal Procedures of the SFPUC																									

Purpose and Need of the Proposed Project

This section of the master response provides additional clarification regarding the purpose and need of the proposed project with respect to hydraulic and seismic needs and includes a more detailed discussion of the Probable Maximum Flood (PMF). This section of the master response responds to all or part of the following comments:

- Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-02]
- Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-02]
- Hisashi Sugaya, San Francisco Planning Commission [A_SFPC3-01]

Hydraulic Improvements

As described in the Draft EIR (Vol. 1, Chapter 3, page 3-5), the primary goal of the Lower Crystal Springs Dam Improvements (LCSDI) project is to lift the operational restrictions on Crystal Springs Reservoir imposed by the California Department of Water Resources, Division of Safety of Dams (DSOD) by implementing hydraulic improvements that would enable excess water that exceeds the capacity of the reservoir during the PMF to flow safely over the dam without compromising the integrity of the dam. The proposed hydraulic improvements include widening the spillway, reshaping the crest of the dam, raising the parapet wall, and replacing the stilling basin at the toe of the dam with a larger basin. The PMF, discussed further below, is a highly improbable flood event based upon the largest precipitation event theoretically possible at this location. The PMF is not associated with a particular probability of occurrence; it is much larger than any flood that has occurred during the period of historical record. The need for the project is due to the DSOD's determination that the LCSD in its current condition cannot sustain the PMF without floodwaters overtopping the dam and possibly damaging the structure.

Therefore, until the proposed improvements are completed, the San Francisco Public Utilities Commission (SFPUC) has reduced the maximum normal water surface elevation in Crystal Springs Reservoir to 283.8 feet¹ to comply with DSOD's operating restrictions and ensure the safety of the dam in the extremely unlikely event of a flood the size of the PMF. In consideration of the low likelihood of the PMF, the DSOD currently allows the SFPUC, with written permission, to raise the water surface elevation in the reservoir at times to 287.8 feet. With these restrictions in place, the DSOD has determined that the LCSD is safe for continued use.

The LCSDI project is not a seismic improvement project. While the hydraulic improvements would comply with current seismic standards, specific improvements for seismic safety are not proposed because the DSOD has determined that the LCSD is currently safe for continued use and the stability of the dam meets current seismic performance standards (DSOD, 2007b). Although it is not a seismic improvement project, the LCSDI project is part of the SFPUC's Water System Improvement Program (WSIP) and would contribute to the regional water system's overall seismic reliability by increasing water supply storage over existing conditions and improving the SFPUC's ability to deliver water to customers on the San Francisco Peninsula in the event of an earthquake or other emergency.

¹ As stated in the Draft EIR (Chapter 3, page 3-2), all elevations used in this document are referenced with respect to the National Geodetic Vertical Datum of 1929 (NGVD or NGVD 29).

Probable Maximum Flood

As described in the Draft EIR (Vol. 1, Chapter 3, page 3-7), the dam was constructed prior to the establishment of DSOD dam safety requirements for the PMF. The spillway and stilling basin were designed for floodwater flows of approximately 4,600 cubic feet per second (cfs), and the SFPUC estimates that the PMF could result in flows over five times greater, about 25,000 cfs. To ensure the dam could accommodate flows of this magnitude, the proposed project would widen the spillway, reshape and permanently raise the spillway crest, raise the parapet wall, and replace the stilling basin at the toe of the dam with a larger stilling basin designed to handle the predicted flows from the PMF.

The PMF event is discussed in the Draft EIR on pages 3-2 (Vol. 1, Chapter 3, Section 3.1) and 5.15-9 (Chapter 5, Section 5.15). As requested by a commenter (A_Hillsb-02), a discussion of the methods used to calculate the Probable Maximum Precipitation (PMP) associated with the PMF is provided here.

The most recent PMP and PMF dam safety studies for the LCSD were conducted in 2008 by the SFPUC's Engineering Management Bureau (SFPUC, 2008). The estimated PMP for the Crystal Springs Reservoir watershed was calculated using the current procedures of the National Oceanic and Atmospheric Administration (NOAA), as presented in Hydrometeorological Reports Nos. 58 and 59. The NOAA guidelines recommend that both general storm² and local storm³ PMPs be estimated for watersheds that are less than 500 square miles; the larger of these estimates represents the PMP for that particular watershed. The PMP amounts for the general storm in the Crystal Springs Reservoir watershed, estimated for various months and time durations, are presented in **Table C&R 4.1-2**; the local storm PMP amounts are presented in **Table C&R 4.1-3**.

**TABLE C&R 4.1-2
GENERAL STORM PMP ESTIMATES FOR THE CRYSTAL SPRINGS RESERVOIR WATERSHED**

	Maximum Probable Maximum Precipitation for Various Storm Durations (inches)					
	1 hour	6 hour	12 hour	24 hour	48 hour	72 hour
All Season (Oct.–Mar.)	2.9	10.2	16.9	23.0	33.6	39.7
April	2.0	6.9	11.4	15.4	21.9	25.4
May	1.7	5.9	9.6	12.8	17.4	19.4
June	1.5	5.0	8.1	10.6	13.9	15.2
July	1.2	4.0	6.5	8.5	11.2	12.2
August	1.1	3.9	6.4	8.5	11.6	13.0
September	2.4	8.3	13.7	18.6	26.3	30.5

SOURCE: SFPUC, 2008.

² General storm PMPs are determined for durations of 1 to 72 hours over areas that range between 10 to 10,000 square miles.

³ Local storm PMPs are determined for durations of 15 minutes to 6 hours over areas that range between 1 to 500 square miles.

TABLE C&R 4.1-3
LOCAL STORM PMP ESTIMATES FOR THE CRYSTAL SPRINGS RESERVOIR WATERSHED

Duration	1 hour	2 hour	3 hour	4 hour	5 hour	6 hour
Maximum PMP (inches)	3.8	4.4	4.7	5.0	5.2	5.3

SOURCE: SFPUC, 2008.

Consistent with the NOAA guidelines, the general storm and local storm PMP amounts presented in Tables C&R 4.1-2 and C&R 4.1-3 were compared, and the largest of these estimates, which corresponds with the 72-hour all-season general storm event, was determined to represent the PMP for the Crystal Springs Reservoir watershed. Thus, the estimated PMP of 39.7 inches is considered to be the critical event for dam safety analysis (SFPUC, 2008).

As part of the 2008 PMP and PMF dam safety studies conducted by the SFPUC, the PMP runoff was modeled through Upper and Lower Crystal Springs Reservoirs to estimate reservoir elevations during passage of the PMF. PMF hydrographs were calculated from the watershed PMP using the U.S. Army Corps of Engineers (USACE) HEC-HMS rainfall-runoff model, and PMF hydrographs were routed through the Upper and Lower Crystal Springs Reservoirs and spillways using the USACE HEC-RAS hydraulic model. The results of the analyses were used to evaluate the ability of the LCSD to withstand the PMF event under various reservoir conditions, and to develop the dam modifications proposed under the LCS DI project that are needed to safely pass the PMF without endangering the safety of the dam or downstream areas (SFPUC, 2008).

As stated on Draft EIR page 3-2 (Vol. 1, Chapter 3, Section 3.1), the PMF is the theoretical flood event predicted to occur under the most severe and extreme combination of meteorological and hydrological conditions in a particular drainage area; it has no historical precedent. The PMF has a very low probability of occurrence, and design for the PMF event is mandated by the DSOD as a "fail safe" design for lesser flood events.

It should be noted here that DSOD has reviewed and concurred with the findings in the PMP/PMF analysis conducted by the SFPUC (DSOD, 2006b and 2007d).

Design of Lower Crystal Springs Dam

This section of the master response provides a discussion of the design and construction of the LCSD as it relates to dam safety. This section of the master response responds to all or part of the following comments:

- *Fan Moberg [I_Moberg-04]*
- *Stephen Pace [I_Pace2-01]*

As described in the Draft EIR (Vol. 1, Chapter 3, page 3-7), the LCSD is an approximately 140-foot-high and 600-foot-wide arched mass concrete dam located within the San Mateo Creek canyon. The top of the dam is 43 feet wide at about elevation 281 feet, and the width at the base of the dam is

176 feet. The crest of the spillway is at an elevation of 283.8 feet, and the concrete parapet wall on the upstream side raises the height of the top of the dam to an elevation of 292.6 feet. An 88-foot wide spillway (opening in the center of the parapet wall) allows floodwaters to pass over the crest of the dam and down into the stilling basin at the toe of the dam, and into San Mateo Creek. The crest of the spillway is at an elevation of 283.8 feet, but prior to the DSOD operational restrictions on reservoir storage related to safe passage of the PMF, the SFPUC could install stoplogs between concrete piers in the spillway to raise the elevation of the spillway to an elevation of 291.8 feet and increase storage capacity. With the current DSOD restrictions in place, the SFPUC can install stoplogs to raise the spillway elevation by 4 feet to 287.8 feet with written permission from DSOD. In addition, as part of the dam's original design, the existing 102-foot-wide and 32-foot-long concrete stilling basin was constructed at the downstream toe of the dam to prevent scour of the dam foundation and to dissipate the energy of water flowing through the spillway and over the dam.

The dam was constructed using interlocking blocks of concrete averaging approximately 34 feet by 34 feet by 8 feet deep. The centerline cross-sectional dimensions increase in width from 176 feet at the base to 43 feet at the crest. The dam was originally constructed in 1887 and 1888 and then raised an additional 30 feet in 1890 to its present spillway elevation. The dam was raised again in 1911 to its present height at elevation 292 feet by raising the parapet wall.

The historical design drawings of the dam (SFPUC, no date, *circa* 1890) indicate that the dam was designed to be raised an additional 30 feet in height. Although the dam was never raised the additional 30 feet, this is believed to be the reason why the interlocking concrete blocks at the top of the dam were left as is, with the tops of the blocks not set at a uniform elevation, leaving depressions in the top of the dam that would help to secure additional concrete blocks in place if the dam were raised in the future. Other reports indicate that the design of the dam permits a future increase in height of 45 feet (San Francisco Water and Power, 1994).

The LCSD is reportedly the first dam where construction specifications for the mixing and placement of the cement and water were used to make the interlocking concrete blocks (DSOD, 2007b); these specifications are essential for the production of uniform, high quality concrete and are standard practice today. In general, concrete solidifies and hardens after mixing and placement due to a chemical process known as hydration. This chemical reaction between cement and water, known as "curing" concrete, continues over time as more and more of the cement reacts with water and the concrete sets to form a rigid structure. The hydration process happens rapidly at first and slows down as time goes by. After about 28 days, a substantial percentage of the hydration has taken place and the concrete typically reaches about 90 percent of its final strength, though it continues to strengthen for decades. Concrete gets stronger as it gets older and continues to cure (Portland Cement Association, 2010). Because of these properties of concrete, the concrete dam could be "stronger" than it was a century ago. Historical inspections indicate that the LCSD survived both the great earthquake of 1906 and the Loma Prieta earthquake of 1989 without damage as evidence of the quality of the dam's design and construction. Nearly 90 years after the dam was built, field tests and core samples found the quality of the concrete to be "good with little evidence of surface deterioration" (W.A. Wahler and Associates, 1977).

Dam Safety Under Existing Conditions

This section of the master response provides additional information regarding the existing condition of the LCSD based on DSOD inspections and studies. This section of the master response responds to all or part of the following comments requesting additional seismic assessments and investigations prior to project implementation:

- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-06]*
- *Anthony Ranii, Hillsborough City School District [A_HillsCSD-02]*
- *Josh Cooperman [I_Cooperman1-04]*
- *Josh Cooperman [I_Cooperman1-07]*
- *Josh Cooperman [I_Cooperman2-01]*
- *Josh Cooperman [I_Cooperman2-02]*
- *Josh Cooperman [I_Cooperman2-05]*

Division of Safety of Dams

As stated on Draft EIR page 3-2 (Vol. 1, Chapter 3, Sections 3.1 and 3.4), the DSOD is responsible for regulating the safety of all dams in California, including dam construction, alteration, repair, maintenance, operation, and removal. DSOD's authority encompasses all dams, appurtenant facilities, and reservoirs in the state, except dams owned and operated by the federal government, which have their own regulatory oversight. The DSOD is comprised of three technical branches: Design Engineering, Field Engineering, and Geology.

The Design Engineering branch reviews all plans and specifications for the construction, repair, or alteration of dams. The Design Engineering branch is also responsible for reviewing surveillance data collected by the dam owner during operations (e.g., reservoir water surface elevations, drainage and seepage flow rates, strong motion measurements⁴). These data are used to supplement the visual observations made by the Field Engineering branch during routine inspections.

The Geology branch of the DSOD is responsible for identifying the site-specific geologic hazards pertinent to dam design and construction. The Geology branch develops ground motion parameters for each dam that are used to evaluate dam stability during earthquakes. The parameters consider the local geology, dam engineering reports, proximity to active and conditionally active earthquake faults, and the results of a probabilistic seismic hazards analysis.

The Field Engineering branch acts as the program manager for all dams in certified status (operational dams) and is thus responsible for routine construction inspections, periodic inspections of operational dams, in-depth reviews of an entire dam or a specific feature, and special inspections in response to an unusual condition, incident, or emergency (Baines, 1999).

⁴ Special sensors, called accelerometers, are used to record large-amplitude ground motions produced during earthquakes and the response of the dam and appurtenances to these motions.

Current DSOD Inspections and Reporting of LCSD

The frequency of routine operational inspections by the DSOD field engineer assigned to a particular dam is based on the individual damage potential⁵ of the dam. Operational inspections are performed during various storage and seasonal conditions and involve a systematic visual inspection of all of the accessible features of the dam, abutment slopes, and toe areas. Concrete surfaces are inspected for deterioration from age and weathering, for structural cracking caused by overstress from applied loads shrinkage, and for differential movement along vertical and horizontal axes and along joints. Particular attention is given to any previously noted defects, indications of distress or instability, structural deformations, and changed conditions. The quantities of seepage⁶ and appearance of the seepage discharges are compared against recent storage volumes and flow history. If at the time of the inspection water is being released from the dam, the flow characteristics in the downstream channel are recorded. In addition, roughly a third of the operational inspections include in-depth instrumentation reviews of the dam surveillance network data (Baines, 1999).

For each inspection, the DSOD field engineer prepares a dam inspection report that compares the present observations with those of past inspections, makes statements about defects and whether they are stable or progressing, and compares instrumentation data (collected by the dam owner and submitted to the Design Engineering branch for evaluation) and seepage observations to see if they are within the design limitations (Baines, 1999).

The DSOD conducts regular inspections of the LCSD, which include performing detailed observations of the dam concrete, spillway, outlet, seepage, and the instrumentation that measures foundation pressures as a part of each inspection. All inspections are done yearly to ensure safety of the dam, although the DSOD required semi-annual inspections from 2003 to 2008 due to concerns regarding the ability of the dam to withstand the PMF without damage. In addition, every three to five years, the DSOD requires that the SFPUC exercise the emergency release system in the presence of a DSOD inspector. **Table C&R 4.1-4** summarizes the conclusions of the inspections reports for the LCSD and Crystal Springs Reservoir performed by the DSOD from 1995 through 2009. As shown in the table, the DSOD has consistently concluded that the dam and reservoir are safe for continued use; the only caveat mentioned is the need to complete the proposed project (i.e., improvements to the spillway and stilling basin to safely pass the PMF) as well as the San Mateo County's Crystal Springs Dam Bridge Replacement project. In the most recent inspection (December 2, 2009), the DSOD reports that "the dam appears stable with no significant changes to the curvature of the dam indicative of excessive stresses" and recommends that following the spillway modification and bridge replacement, the SFPUC should establish survey points on the dam and reference benchmarks, and that a survey should be performed each year and following significant earthquakes.

⁵ The damage potential is based on the size of the dam and reservoir, the estimated population that would have to be evacuated during dam failure and the estimated monetary loss to property from a failure.

⁶ Seepage that is controlled by internal drains or foundation drains is not generally a concern.

TABLE C&R 4.1-4
SUMMARY OF DSOD INSPECTION REPORTS OF LOWER CRYSTAL SPRINGS DAM

Date of Inspection	Conclusions of Inspection Report
12/2/09	From known information and visual inspection, the dam, reservoir, and appurtenances are judged safe for continued use.
10/1/08	From known information and visual inspection, the dam, reservoir, and appurtenances are judged satisfactory for continued use.
4/29/08	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued use, contingent upon adequate protection of the abutments and toe during the PMF together with seismic upgrades to the Skyline Boulevard bridge.
11/06/07	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued use, contingent upon adequate protection of the abutments and toe during the PMF together with seismic upgrades to the Skyline Boulevard bridge.
6/26/07	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued use, contingent upon adequate protection of the abutments and toe during the PMF.
12/12/06	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued use, contingent upon adequate protection of the abutments and toe during the PMF.
6/6/06	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued operation, contingent upon adequate protection of the abutments and toe during the PMF.
12/4/05	From known information and visual inspection, the dam, reservoir, and appurtenances are judged satisfactory for continued use pending repair and seismic retrofit of the bridge over the spillway and installation of adequate protection for the abutments and toe during the PMF.
5/25/05	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued operation, contingent upon adequate protection of the abutments and toe during the PMF together with seismic upgrades to the overhead Skyline Boulevard bridge crossing.
9/24/04	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued operation, contingent upon adequate protection of the abutments and toe during the PMF together with seismic upgrades to the overhead Skyline Boulevard bridge crossing.
1/06/04	Based on the available information and this inspection, the dam and reservoir are judged satisfactory for continued operation, contingent upon adequate protection of the abutments and toe during the PMF along with seismic upgrades to the overhead county bridge crossing.
2/03/03	Based on available information and this inspection, the dam and reservoir are judged satisfactory for continued operation, contingent upon satisfactory protection of the abutments and toe to handle the design storm along with an improvement to the overhead bridge crossing.
12/13/01	Based on known information and visual inspection, the dam, reservoir, and appurtenances are judged satisfactory for continued use pending any necessary repairs or maintenance items mentioned herein. (Note: The repairs and maintenance items refer to the outlet facilities in tower #1 and to survey monument, rainfall, and groundwater level data; the SFPUC has since responded to these requests.)
11/17/97	Based on known information and visual inspection, the dam, reservoir, and appurtenances are judged satisfactory for continued use pending completion of the spillway improvements to safely pass the PMF, and replacement/restoration of the bridge support system.
11/15/96	Based on known information and visual inspection, the dam, reservoir, and the appurtenances are judged satisfactory for continued use pending completion of the spillway improvements to safely pass the PMF, and replacement of the overhead bridge.
9/15/95	Based on known information and onsite inspection, the dam, reservoir, and appurtenances are judged satisfactory for continued use pending the completion of improvements to the spillway to safely pass the PMF, and replacement of the county road bridge above the dam.
8/25/94	Based on known information and visual inspection, the dam, reservoir, and appurtenances are judged safe for continued use pending completion of improvements to the spillway to safely pass the PMF, and replacement of the overhead bridge.

SOURCES: DSOD, 1994, 1996, 1997, 1998, 2002, 2003, 2004a, 2004b, 2005a, 2005b, 2006a, 2007a, 2007c, 2007e, 2008a, 2008b, 2010.

The DSOD has certified that the LCSD and Crystal Springs Reservoir are currently safe to impound water to an elevation of “288.00 feet Spring Valley datum” (equivalent to 291.8 feet NGCD 1929) pursuant to Part 1 of Division 3 of the California Water Code (DSOD, 1966), even though as described above, the reservoir is currently restricted to elevation 283.7 feet⁷ because the spillway cannot pass the PMF. The SFPUC works with the DSOD on an ongoing basis to ensure the safety of the LCSD as part of its regular operations and maintenance program, independent of the proposed project.

2007 DSOD Seismic Reevaluation Program

In 2007, the DSOD performed an in-house seismic hazard file review of the LCSD as part of its Seismic Reevaluation Program (DSOD, 2007b). This evaluation consisted of a comprehensive review by the three branches of the DSOD—the Design Engineering branch, Field Engineering branch, and Geology branch. It addressed the dam’s instrumentation to monitor foundation pressures; materials strength and dam stability; site-specific seismic hazards, including predicted motion from a magnitude 8.0 earthquake on the San Andreas fault; spillway and outlet soil structure interaction, including erosion potential of the abutments; stability of abutments; foundation conditions; and sufficiency of data to model and evaluate the seismic performance of the dam and outlet towers.

The report concluded the following:

... the dam’s favorable dimensions (40-foot-wide crest and its being wider at the base than it is tall), being keyed into the foundation and abutment rock, its having a slight arch in plan view, and its being constructed of concrete placed in interlocking blocks should allow the dam to withstand significant seismic loading. Further review of the dam’s stability is not recommended at this time.

The report further notes that while the design of the outlet towers are beneficial in resisting seismic loading, the towers could be subject to some degree of damage based on current seismic design requirements but having two outlet towers provides some degree of backup. In addition, there is some question as to how well the crest parapet wall would perform during an earthquake and that because the bridge located on the crest of the dam is deemed seismically deficient, failure of the bridge could result in damage to the parapet wall. The DSOD acknowledges, however, that these structures are proposed for replacement or retrofitting, and until that occurs, water should not be stored against the parapet wall (DSOD, 2007b).

SFPUC Seismic Safety Studies

In addition to the DSOD reports and evaluations, the SFPUC conducted a seismic analysis of the LCSD in April 2009 (SFPUC, 2009). This analysis was conducted by a professional engineer with more than 35 years of experience and who is approved by the Federal Energy Regulatory Commission (FERC) as a “Part 12 Independent Consultant” to perform safety inspections of

⁷ The DSOD seismic reevaluation report indicates that the dam is restricted to elevation 283.7 feet, although the DSOD restriction order indicates the spillway elevation without stoplogs in place, which is 283.8 feet.

FERC-licensed dams. The analysis reviewed the geologic conditions at the LCSD, the dam's history, modeling of the dam's performance, water loading and structural differences, condition of the structure and foundation, and the magnitude of predicted future earthquakes compared to the 1906 San Francisco earthquake. The analysis notes that the LCSD is anchored in bedrock, that high-quality construction methods and materials were used to build the dam, that the concrete materials strengthen with age, and that the dam's excellent performance during the 1906 San Francisco earthquake is indicative of a competent structure. This report concluded that "the LCSD was completed before the 1906 earthquake and was subjected to some of the highest ground motions associated with a seismic event on the San Andreas fault" and that "there have been no significant changes to the dam structure, the water level, or the conditions of the dam and foundation that would significantly affect future performance." Since the water level in the reservoir at the time of the 1906 earthquake was at or near maximum, this statement would apply to the water levels as proposed under the LCSDI.

Both the 2007 DSOD analysis and the SFPUC 2009 analysis considered a 1977 report prepared by Wahler and Associates as part of their assessments. The SFPUC retained Wahler and Associates to conduct a comprehensive investigation of the seismic stability of the LCSD (W.A. Wahler and Associates, 1977). The purpose of the report was to determine whether LCSD meets seismic stability criteria based on field investigations and analytic studies. The report determined that despite the age of the dam (over 80 years old at that time), the dam and its foundation required no remedial work to improve their structural stability under seismic conditions. The investigation included review of historical data; geologic and physical work, including surface reconnaissance/surveys and subsurface explorations; laboratory and geophysical field tests to evaluate the mechanical properties of the mass concrete in the dam and the geologic materials in the dam's foundation; computer modeling and a structural response analysis for both static and dynamic loading conditions, including two potential earthquake scenarios; and determination of computed values for stress conditions in the dam and foundation under each type of loading. The report concluded that "the risk of major structural damage to the dam and foundation from the maximum credible earthquake is low" and that "no remedial work is required to improve the structural stability of the dam or its foundation." The report had two recommendations: further analysis of the structural adequacy of the stoplog system during an earthquake and seismic safety analysis of the bridge constructed on top of the dam.

Since completion of the 1977 report prepared by Wahler and Associates, the DSOD and SFPUC have periodically reviewed and evaluated the assumptions, methodology, results, and conclusions of that report in combination with current engineering standards, and current and ongoing visual inspections and instrument monitoring data. These evaluations have determined that data developed in the 1977 report remain valid today and relevant in determining the current seismic stability of the dam. The SFPUC retained URS to conduct a review of the 1977 Wahler report and the 2007 DSOD Seismic Reevaluation report as part of the engineering studies for the LCSDI project (URS, 2010). The URS review included evaluation of data considered in the 1977 assessment of potential fault rupture and examined if more recent studies since 1977 have identified relevant new data; the conclusions of this evaluation were consistent with the findings in the Wahler report. The review concurred with the findings of the Wahler report, that the LCSD

should be able to withstand the shaking of the “maximum expectable” earthquake, which the Wahler report determined to be similar to the 1906 event on the San Andreas fault. The URS review also considered DSOD reports and findings relevant to LCSD and design considerations for the LCSDI project. Findings indicate that the seismic ground motion assumptions used for the design of the LCSDI are about 20 percent higher than those used in the 1977 study, and that the status and demonstrated performance of the existing dam in the 1906 earthquake indicate that LCSD should be able to safely withstand the higher level of shaking predicted by the ground motions developed based on current procedures. Overall, the review concluded that additional seismic analyses for LCSD are not warranted at this time.

Dam Safety Under Proposed Project Conditions

This section of the master response describes the safety of the LCSD during project construction and future operations. This section addresses public concerns regarding a perceived increased risk of dam failure and downstream flooding hazards associated with the proposed increase in average annual water storage and reservoir levels. This section of the master response responds to all or part of the following comments:

- *Michael G. Waggoner, California Department of Water Resources, Division of Safety of Dams [A_DSOD-01]*
- *Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01]*
- *William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-03]*
- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-01]*
- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-03]*
- *Anthony Ranii, Hillsborough City School District [A_HillsCSD-01]*
- *Joan Bardet [I_Bardet-01]*
- *Joan Bardet [I_Bardet-02]*
- *Joan Bardet [I_Bardet-03]*
- *Josh Cooperman [I_Cooperman1-01]*
- *Josh Cooperman [I_Cooperman1-05]*
- *Josh Cooperman [I_Cooperman2-01]*
- *Fan Moberg [I_Moberg-01]*
- *Fan Moberg [I_Moberg-02]*
- *Fan Moberg [I_Moberg-03]*

DSOD Dam Alteration Permit

Prior to construction of the proposed project or variant, the SFPUC is required to obtain a Dam Alteration Permit from the DSOD. As part of the process, the DSOD Design Engineering branch must review and approve all detailed construction plans and specifications for the proposed dam modifications. The SFPUC has been in consultation with the DSOD regarding this permit and has already submitted a dam modification application for the LCSDI project. The DSOD will conduct a thorough review of plans and specifications to ensure the proposed dam modifications meet all minimum requirements for dam safety prior to issuing a Dam Alteration Permit.

Dam Safety During Construction

After issuing the Dam Alteration Permit, the DSOD would oversee project construction activities to ensure the work is done in accordance with the approved plans and specifications. The DSOD Field Engineering branch typically conducts routine inspections of active construction projects, including construction projects for repairs and modifications to existing dams, and consults with the DSOD design review engineer and staff geologist when problems arise or changes are proposed to ensure conformance with the design assumptions and criteria (Baines, 1999).

During the construction period, the SFPUC would continue to operate the reservoir in a manner similar to existing practices, although the ability to release or spill water to San Mateo Creek over the spillway would be interrupted. Because the majority of the construction is scheduled for the dry season when there are typically no releases or spills, this interruption is not expected to affect systemwide operations or customer deliveries. More importantly, during the construction period when there is no functioning spillway or stilling basin, the SFPUC would take extreme precautions to prevent any spill over the dam that could threaten the structural integrity of the dam. The SFPUC would maintain reservoir levels during the construction period at 2 to 4 feet below the current spillway elevation of 283.7 feet to reduce the potential for floodwaters to overtop the dam. These precautions would maintain the integrity of the dam and ensure dam safety during construction. In addition, as described above, the DSOD would oversee construction activities to further ensure dam safety during construction.

Proposed Operations and Releases from LCSD

Following construction and during project operations, the DSOD would continue regulating the dam to ensure dam safety, including performing annual inspections and periodically reviewing the stability of the dam and its major appurtenances. Proposed future operations of Crystal Springs Reservoir are described on Draft EIR pages 3-37 to 3-39 (Vol. 1, Chapter 3, Section 3.7) for the proposed project and in Chapter 3 of this document for the variant. As stated in the Draft EIR and in Chapter 3, the post-construction operating protocols for the reservoir would be similar to the current practices: (1) the SFPUC would try to keep the reservoir as full as possible without exceeding the maximum normal operating level; (2) the SFPUC would operate the reservoir to avoid uncontrolled spills (i.e., water over the spillway); and (3) the SFPUC would operate the reservoir to minimize releases to San Mateo Creek (i.e., controlled releases through the release valves at the dam, discharging up to 600 cfs as downstream conditions allow). Operations of the dam and reservoir following construction of the proposed project or variant (see Chapter 3 for a description of the LCSDI variant) would be similar to existing practices except that the maximum normal water surface elevation would be 287.8 feet, 4 feet higher than the current normal maximum of 283.8 feet. This increase in reservoir water elevation corresponds to an increase in the average annual water storage in the reservoir from 15.4 to 17.8 billion gallons, or an increase of 2.4 billion gallons.

As described in Chapter 3 of this Comments and Responses document, since publication of the Draft EIR, the proposed operations of the LCSD have been slightly modified (also see Appendix C&R D). The SFPUC, in negotiations with the California Department of Fish and Game (CDFG)

and the National Marine Fisheries Service (NMFS) for the regulatory permitting process for the LCSDI and the Crystal Springs/San Andreas (CSSA) Transmission Upgrade projects, has developed a proposed minimum year-round flow release schedule for Crystal Springs Reservoir to support native fisheries in lower San Mateo Creek. Please refer to Chapter 3 of this Comments and Responses document for further description of the proposed modifications to future dam operations and discussion of potential impacts associated with the releases.

Geologic Hazard of Increased Reservoir Water Levels

As described above, the LCSD and reservoir are currently certified by the DSOD as safe to impound water to a maximum elevation of 291.8 feet even though the reservoir is currently restricted to a maximum elevation of 283.8 feet. Under the proposed project or variant, the maximum normal water level would be 287.8 feet, with short-duration exceedances of up to 291.8 feet for up to 14 days during the rainy season. The absolute maximum reservoir water levels would be the same as the water levels in the reservoir currently deemed safe by the DSOD under static and dynamic loading conditions. Although the proposed project or variant would raise the average reservoir levels higher than the current levels, the proposed future water levels would be well within the levels certified by the DSOD and there would be no increase in geologic hazards due to the increased reservoir operating levels.

Draft EIR page 5.14-6 (Vol. 1, Chapter 5, Section 5.14) describes the existing conditions of the dam and its foundation with respect to structural integrity and vulnerability to groundshaking during an earthquake. The Draft EIR states that “the LCSD has maintained its structural integrity through groundshaking from both the 1906 San Francisco earthquake and the Loma Prieta earthquake of 1989. A seismic stability study of the LCSD concluded that the risk of major structural damage to the dam and its foundation from the maximum credible earthquake is low (W.A. Wahler and Associates, 1977).”

To provide further clarification on this issue, the second paragraph of Impact GE-4 on Draft EIR page 5.14-17 is revised as follows:

As discussed above in Section 5.14.1, Setting, groundshaking in the project area during an earthquake, measured as peak ground accelerations, is expected to be quite strong (0.69g). The proposed project operations would increase the average and maximum reservoir levels over current levels. However, the existing dam has withstood both the 1906 San Francisco earthquake and the 1989 Loma Prieta earthquake, and the DSOD has certified that the LCSD and reservoir are currently safe to impound water within the proposed increased range of water level elevations (DSOD, 1966). Although strong groundshaking could be experienced in the future under proposed operating conditions, the proposed improvements to the stilling basin and dam would be designed to withstand groundshaking in accordance with current DSOD seismic standards. With compliance with these standards, subject to review and approval by the DSOD, impacts related to groundshaking would be *less than significant*, and no mitigation is required.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Reduced Flooding Hazards during the Probable Maximum Flood

One commenter (A_Hillsb-01) incorrectly states that the proposed project would result in a significant increase in flow along lower San Mateo Creek during the PMF event. Project-related impacts related to flood hazards along lower San Mateo Creek are presented in Impact HY-6 on Draft EIR pages 5.15-36 and 5.15-37 (Vol. 1, Chapter 5, Section 5.15) and in Chapter 3, Section 3.3 of this document for the LCSDI Variant. Neither the proposed project nor variant would increase the volume of water that would flow down San Mateo Creek during the PMF event. As described above, the PMF is the flood produced when the PMP occurs over the Crystal Springs Reservoir watershed. The proposed project or variant would have no effect on the volume or frequency of precipitation events in the watershed or on the size of the PMF.

Proposed modifications to the spillway and parapet wall at the top of the dam would prevent overtopping of the parapet wall during the PMF, and would not affect the volume of water associated with the PMF. Although some wave and splash overtopping could occur, the proposed improvements to the spillway and stilling basin are designed to prevent erosion to the dam's foundation or abutments during a PMF event (SFPUC, 2008). Under the existing condition, the spillway at the LCSD cannot accommodate the PMF without overtopping of the dam. In the event of meteorological conditions resulting in the PMF, water would flow over the parapet wall of the dam, into the stilling basin at the toe of the dam, and continue down San Mateo Creek. The PMF is a huge flood without historical precedent; although, without the proposed dam modifications, it could cause considerable property damage and jeopardize public safety in the area downstream of the dam. Because the existing stilling basin at the dam is currently too small to dissipate the energy produced in this extraordinarily large flood event, the foundation of the dam could be undermined and threaten the stability of the dam.

The proposed project or variant includes an expanded spillway that would enable the PMF to safely pass over the dam within the spillway rather than overtopping the parapet wall. It also includes an enlarged stilling basin that would dissipate the energy produced by the PMF and protect the foundation of the dam from erosion. While the area downstream of the dam would still be exposed to the effects of the PMF, the proposed improvements would protect the dam and, to some extent, the stream channel from the effects of such a flood. Accordingly, the Draft EIR concludes that the proposed project would have a beneficial impact related to flood hazards along lower San Mateo Creek because it would reduce the risk of downstream flood hazards during very large storm events, including the PMF (page 5.15-37), and a similar analysis with the same conclusion is presented in Chapter 3, Section 3.3, of this document for the variant.

No Change in Flooding along Lower San Mateo Creek

As noted above, the proposed project or variant would reduce downstream flood hazards during very large storm events. The proposed project or variant would increase flood control benefits in large storms, similar to those experienced in the last 100 years, as well as in huge storms without historical precedent. Although flood control is not a stated purpose of Crystal Springs Reservoir, it is nevertheless one of its indirect benefits. Currently, the SFPUC lowers the water surface elevation in Crystal Springs Reservoir by several feet below its normal maximum water surface elevation at the beginning of the rainy season. Lowering the water surface elevation creates

reservoir capacity to accommodate runoff from most ordinary winter storms and avoids uncontrolled releases over the top of the spillway. As a result, the flood hazard in areas bordering San Mateo Creek downstream of Crystal Springs Reservoir is less than it would be in the absence of LCSD and the reservoir.

With implementation of the proposed project or variant, future operations of Crystal Springs Reservoir would be similar to current operations: minimizing releases or spills would remain an important operating goal in order to maximize capture of local runoff, and the SFPUC would lower the water surface elevation by a few feet below its normal maximum value at the beginning of the rainy season to capture local runoff. Similar to existing operations, flows along lower San Mateo Creek would be affected by occasional controlled releases through the pipes and valves at the base of the dam, about once every 10 years on average when there is a very large storm or series of large storms in the watershed; the maximum rate of discharges to lower San Mateo Creek of 600 cfs during controlled releases would remain the same—under both the proposed project and LCSDI Variant described in Chapter 3 of this document. Currently, in addition to the controlled releases, there are rare circumstances (none in the last 25 years) in which a sudden large storm event produces enough runoff to fill the flood reservation and an uncontrolled release over the top of the spillway occurs, despite the SFPUC releasing 600 cfs through the release valves. Under the proposed project or variant, uncontrolled spills would be less frequent than under current conditions because of the increase in effective flood storage below the spillway crest. Thus, due to the extremely rare occurrence of uncontrolled spills, the overall frequency and volume of future large releases and spills to lower San Mateo Creek would be the same as or similar to the existing frequency and volume of existing spills and releases with implementation of the project or variant.

Passage of water over the spillway does not indicate that there is a heightened risk of dam failure. The spillway on the top of the dam and the stilling basin at its toe are designed to enable water from large storms to pass over the dam without damaging it. As discussed, the existing spillway and stilling basin do not meet current standards set for the PMF by the DSOD. The proposed improvements to the spillway and stilling basin would enable the LCSD to meet the current standards and to substantially improve the ability of the dam to accommodate large floods.

Flooding along creeks tributary to San Mateo Creek, such as the creek adjacent to South School, is usually a result of runoff from the tributary creek's own watershed, although in some cases it can be made worse by water backing up the tributary creek when flow is high in San Mateo Creek due to runoff and/or tidal influence. Implementation of the proposed project or variant would not affect runoff in the watersheds of tributary creeks, nor would it increase flow in San Mateo Creek during storms compared to existing conditions. Thus, the proposed project or variant would not increase the flood hazard downstream along lower San Mateo Creek during most storms and might actually reduce it. The project or variant would decrease the flood hazard in very large storms because it would reduce frequency of uncontrolled spills as well as reduce the risk of damage to LCSD.

Under special circumstances in the past, the SFPUC has warned property owners that a large release from Crystal Springs Reservoir was imminent, and that the release could raise the water levels along lower San Mateo Creek. Such a circumstance could occur again in the future, but implementation of the proposed project or variant would not increase the frequency or magnitude of such releases, and may reduce it. The effects of climate change, if any, on precipitation patterns are too speculative to quantify at this time and the associated operational requirements for releases from the reservoir would occur irrespective of the proposed project or variant. For more information on the effects of climate change, please refer to the Program EIR on the Water System Improvement Program, Volume 7a, Chapter 14, Section 14.11, Master Response on Climate Change (San Francisco Planning Department, 2008).

Increased Hazard of Dam Failure as a Result of Increased Storage

Several commenters incorrectly imply that the proposed increase in average annual water storage in Crystal Springs Reservoir would result in a greater potential for dam failure. As discussed on Draft EIR page 3-37 (Vol. 1, Chapter 3, Section 3.7), with implementation of the proposed project or variant, the SFPUC would operate Crystal Springs Reservoir at an average annual water storage capacity of 17.8 billion gallons, an increase of 2.4 billion gallons from the current DSOD-restricted average water storage of 15.4 billion gallons. The dam was designed to be raised an additional 30 to 45 feet and to withstand the hydraulic pressure exerted by much more than 22.5 billion gallons of water (the original storage capacity of the reservoir when it was constructed in 1890). The current DSOD certification states that the dam is safe to impound waters to elevation 291.8 feet, equivalent to 22.5 billion gallons storage (DSOD, 1966). Therefore, the hydraulic pressure exerted by the future proposed maximum normal water storage volume would be less than that for which the dam was designed and is currently approved. Although the proposed project or variant would raise the average reservoir water levels above the current levels, the proposed future water levels would be well within the range that DSOD currently judges to be safe.

As discussed above, the DSOD conducts regular inspections of the LCSD, including performing detailed observations of the dam, spillway, outlet, seepage, and the instrumentation that measures foundation pressures as a part of each inspection. Inspections by the DSOD have not revealed any deficiencies associated with the ability of the dam to support the design storage volume. The major deficiencies identified by the DSOD are associated with the inability of the dam to safely pass the PMF event over the existing spillway, and this deficiency would be addressed by the proposed improvements to the dam.

To provide additional clarification regarding potential dam failure hazards associated with future operations under the proposed project, Impact HY-6 on Draft EIR pages 5.15-36 and 5.15-37 (Vol. 1, Chapter 5, Section 5.15.3) is revised as follows:

Impact HY-6: Increased flood hazards along lower San Mateo Creek during project operations, including risk of dam failure.

Lower Crystal Springs Dam Vicinity

As described above in Section 5.15.1, Setting, although flood control is not a purpose of Crystal Springs Reservoir, the effect of the reservoir, and the SFPUC's current operating protocol for the reservoir, has been to greatly reduce the risk of flooding along lower San Mateo Creek as a result of ordinary storms over the upper watershed. Flood hazards with the proposed project in place would be similar to the existing condition. With the reservoir's storage capacity restored and an operating protocol in place that would provide a wintertime flood reservation and restrict the normal maximum water surface to a level 4 feet below the spillway, flood risk during ordinary storms would be comparable to current flood risk.

Flood hazards would be reduced during extraordinary storms that could generate flow up to the PMF. Because the LCSD with the proposed improvements would pass the PMF without damage to the dam, flood hazards in the areas along lower San Mateo Creek downstream of the dam would be decreased. This would be a *beneficial* effect of the project.

The dam failure inundation map published by the San Mateo County Office of Emergency Services shows the limit of inundation for the LCSD starting from the dam and stretching to San Francisco Bay. In the event of catastrophic dam failure, floodwaters from Crystal Springs Reservoir are predicted to travel along San Mateo Creek and spread across low-lying areas in the cities of San Mateo and Foster City, ultimately discharging to the bay (San Mateo County, 2005). The inundation zone for LCSD shown in the San Mateo County inundation map represents the path of water that could be expected if the dam completely failed with a full reservoir. The dam inundation map is based on the certified capacity of the dam without the temporary DSOD restrictions, which corresponds to a maximum normal water surface elevation of 291.8 feet, 4 feet higher than the proposed maximum normal water surface elevation of 287.8 feet. Thus, the volume of water that could be released in the event of dam failure with the proposed project would be slightly less than what is assumed in the map.

However, implementation of the proposed project would increase the maximum normal water surface elevation in Crystal Springs Reservoir by 4 feet, from 283.8 feet (DSOD-imposed operational restriction) to 287.8 feet, which corresponds with an increase in water storage of approximately less than 8 percent when compared to existing conditions. In the unlikely event of a complete and catastrophic dam failure with a full reservoir, the proposed increase in water storage would increase the total volume of water that could be released downstream, potentially increasing inundation hazards and affecting a greater area downstream of the dam. In both cases—existing conditions and proposed future conditions—the volume of water that could be released in the event of a dam failure would be less than assumed in the dam failure inundation map.

Although implementation of the proposed project would increase the volume of water that could be released in the event of catastrophic dam failure when compared to existing conditions, the proposed modifications to the LCSD would decrease the risk of dam failure

when compared to the existing condition. Under the existing condition, the spillway of the dam cannot accommodate the PMF without overtopping the dam. Because the existing stilling basin is too small to dissipate the energy of water produced during very large flood events such as the PMF, large flows over the parapet wall could undermine the dam's abutments and foundation and threaten its structural integrity, increasing the risk of dam failure. The proposed project would enable the safe passage of large floods (up to the size of the PMF) over the spillway without compromising the dam's foundation or abutment, thereby increasing dam safety and reducing the risk of dam failure and associated downstream inundation effects. Thus, the proposed project would have a beneficial effect with respect to risk of dam failure and associated flood hazards when compared to existing conditions.

In addition, the following text is inserted after the third paragraph of Impact C-HY on Draft EIR pages 5.15-47 (Vol. 1, Chapter 5, Section 5.15.3) to clarify the cumulative beneficial effects to the risk of dam failure associated with future operations under the proposed project in combination with the CSSA project:

Currently, in the event of an emergency related to potential dam failure, the DSOD can mandate emergency drawdown of Crystal Springs Reservoir to lower the reservoir level if the dam were to incur severe damage. The SFPUC can implement emergency release discharges of up to 800 cfs of sustainable flow from four existing spill valves plus additional flows from various other pipes at the Crystal Springs Pump Station. The CSSA Transmission Upgrade project includes improvements that would consolidate and increase the emergency release flow rate (up to 1,200 cfs) and would thereby lower the risk of dam failure by enabling faster drawdown of reservoir levels, decreasing the potential for impacts associated with catastrophic dam failure. There would be a cumulative effect of this improvement in combination with the proposed project's effect on reducing the risk of dam failure and associated downstream inundation effects due to the improved ability of the LCSD to accommodate flows of large floods (up to the size of the PMF) over the spillway without compromising the dam's foundation or abutment. Therefore, with respect to potential effects on downstream flooding associated with risk of dam failure, this would be a cumulative beneficial effect.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

4.1.2 Individual Comments and Responses

Seismic Safety of Lower Crystal Springs Dam

Comment G1, Request for Seismic Studies

The following comments are included under Comment G1:

- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-06]*
- *Anthony Ranii, Hillsborough City School District [A_HillsCSD-02]*
- *Josh Cooperman [I_Cooperman1-04]*
- *Josh Cooperman [I_Cooperman1-07]*
- *Joshua Cooperman [I_Cooperman2-01]*
- *Joshua Cooperman [I_Cooperman2-02]*
- *Joshua Cooperman [I_Cooperman2-05]*

"2. Section 5.14 of the EIR discusses the Geology and Soils within the project area. Because of the proximity of this dam to the San Andreas fault, the EIR references seismic stability study conducted by W.A. Wahler and Associates in 1977, which concluded that potential in the dam foundation rupture is remote.

Given the recent seismic events in China, Southern California, Indonesia, Mexico, Chile, and Haiti as well as the time line of the last study of the dam in 1977, the Town is requesting that SFPUC approve a seismic assessment and seismic performance study of the dam and its foundation with this project, including new concrete core sample, use of updated software and imaging techniques by independent seismic experts and seismic engineers, and provide a copy of that study to the Town, members of the public and other agencies. We further request that SFPUC implement the study's recommendations, prior to commencement of construction. Since SFPUC is engaged in improving this facility any seismic upgrade can easily be included with the improvements identified in the EIR." (*Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-06]*)

"We strongly request that the possibility of a dam failure or rupture due to seismic events be studied more fully. The last time the dam was fully investigated for seismic stability was 1977. Since then, many forces have been at play on the dam, and we strongly request that more study and, if necessary, seismic upgrades be included within the scope of this project. A dam failure could put hundreds of students in danger." (*Anthony Ranii, Hillsborough City School District [A_HillsCSD-02]*)

"I indicated at that point in time to specific people of the PUC my concerns. All I received was a three- or four-page letter from someone in your staff highlighting an internal engineer's review without any independent—mention of any independent formal report of outside engineering firms provided to the PUC and the further statement in that letter that you, the PUC, had absolutely no interest in pursuing this further. As far as you were concerned, it was a closed issue." (*Josh Cooperman [I_Cooperman1-04]*)

"First of all, the most recent file reviews of this dam were only file reviews. No independent new data was provided—very limited reviews. The dam did pass their review. There has been, according to them, no thorough independent inspection of the dam-core samples, things like that—since the early or mid 1970s. That's 40 years ago, when the federal government did a—according to them. I'm not an expert. This is hearsay, basically, taking it from what they told me—did a nationwide survey of dams.

While they couldn't formally recommend any independent survey because they're State officials and that's not their jurisdiction, they didn't see any harm in getting a third party opinion—kind of like what happens when you go to a doctor.

And I would like to have in any third party opinion that you receive—and I understand you've hired engineers for the PUC—that all of those reports be made public and not be made subject to confidentiality.

Again, I reiterate for the record that there should be an independent review by an independent engineering firm, independent of the San Francisco PUC, so the residents here, including myself, will have information. And if the dam passes, that's fantastic. I'd love to hear that." (*Josh Cooperman [I_Cooperman1-07]*)

"1. The safety of the dam is the BIGGEST environmental issue respecting this EIR.

It is the big elephant in the room, which you prefer to ignore.

As the water level behind the dam will be increased by at least 4 foot following the upgrades, the integrity of the dam must be considered in great detail in this EIR, as the volume of water behind it will increase from the current levels, which could result in adverse environmental consequences. This EIR is deficient without such an analysis.

Yet, despite several thousand pages of reports and evaluations in the draft EIR, I have found only one sentence on page 3-7 which discusses this precise issue and you dismiss it as unworthy of further consideration, relying on evaluations by another agency, the State Division of Safety of Dams, with no citation or justification for your reasoning.

However, in discussing this with that State Division, they specifically indicated their most recent review was VERY limited in scope to a file review of the existing data, without further investigation. While the State in our conversation was not in a position to provide other observations or recommendations, it specifically did not imply that such review would not be beneficial or that other issues which the State did not observe under its limited circumstances might become apparent.

Indeed, the EIR concedes the last physical inspection with corings, etc. occurred in 1977, over 30 years and eons of technology ago. As even your managers concede that good foundations and good foundation contact is advisable, new corings should be performed to ensure that there has been no deterioration in the dam in the interim.

This should be again completed by an independent engineering group, and reviewed in a totally transparent manner with ALL the constituencies in Hillsborough, San Mateo, Burlingame, Millbrae and the County, to ensure that the safety of our community is not compromised, nor are

shortcuts taken, as I believe may have occurred in a prior instance with the actions of the SFPUC.” (Joshua Cooperman [I_Cooperman2-01])

“2. The cost of the study is minimal compared to the dangers to your enterprise from not acting.

As an enterprise fund, your business is selling water to other agencies and to San Francisco residents. While I applaud your efforts and that of the State Seismic Safety Commission to proceed on upgrading your system, a paramount concern should be ensuring the integrity of the reservoir. Otherwise, the funds spent on the water delivery system improvements from the Sierra to Crystal Springs will be for naught. Without water revenues, there will be great financial pressure on your agency and that of the City and County. AND, without water to sell for the BAWSCA wholesalers, their jurisdictions will face economic consequences, both for the water enterprises as well as the general economy.” (Joshua Cooperman [I_Cooperman2-02])

“3. The cost of any independent study is minimal and can be incorporated into your rate base. As for any timing delays, this study should be commenced immediately, particularly before the repairs begin, in the event changes to the contemplated repairs need occur due to findings from an engineering evaluation of the dam.

To provide objectivity, the local water agencies should also have their engineers review the independent findings.

4. Any independent findings would be available for inspection by future regulators, commissioners and interested parties, and could provide the Agency with justification that it left no stone unturned in ensuring the safety and integrity of its improvements program, this EIR process and the citizens of both San Francisco and the Peninsula. Anything less will only serve to emphasize and highlight potential deficiencies in your agency’s process here and in its improvements program.” (Joshua Cooperman [I_Cooperman2-05])

Response

Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Dam Safety Under Existing Conditions*, which includes a summary of seismic safety studies and reports prepared by DSOD and others relevant to LCSD. The DSOD and other reports cited in the master response are listed in the References at the end of this section, are available for public review as part of the project files for this EIR.⁸

⁸ San Francisco Planning Department, Major Environmental Analysis, 1650 Mission Street #400, San Francisco, California 94103. Case No. 2006.0536E

Comment G2, Division of Safety of Dams Contact

The following comment is included under Comment G2:

- *Josh Cooperman [I_Cooperman1-06]*

"In addition, at the time of the BAWSCA hearing, I was given the name of a—by your staff of someone at the Division of Dam Safety who I contacted. And unfortunately, there—they weren't very reassuring." (*Josh Cooperman [I_Cooperman1-06]*)

Response

All correspondence to the DSOD should be directed to David A. Gutierrez, Chief of the Division of Safety of Dams, at 2200 X Street, Suite 200, Sacramento, California, 95818. Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Dam Safety Under Existing Conditions*, which includes a summary of seismic safety studies and reports prepared by DSOD and others relevant to LCSD.

Comment G3, Age of Dam

The following comment is included under Comment G3:

- *Fau Moberg [I_Moberg-04]*

"So I want to be sure that a lot of research has been done and this isn't just a—kind of a cheap fix for some kind of idea that we need more water because I think we need to really consider the safety of this community.

And I think attention needs to be directed into the study of what happens to cement when it's 120 years old. I believe it's put together in cement blocks that interlock. It's supposed to be state-of-the-art for 120 years ago. We live in a totally different world now.

I just think this really should be looked at and not—I don't know we should be thinking about making it higher so it can have more water behind it and support a much greater weight. I mean, what are we doing?" (*Fau Moberg [I_Moberg-04]*)

Response

Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Design of Lower Crystal Springs Dam*, which includes a discussion of the strength of cement.

Emergency Response and Early Warning System

Comment G4, Crystal Springs Dam Emergency Action Plan

The following comments are included under Comment G4:

- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-07]*
- *Anthony Ranii, Hillsborough City School District [A_HillsCSD-03]*
- *Josh Cooperman [I_Cooperman1-08]*
- *Fan Moberg [I_Moberg-02]*
- *Fan Moberg [I_Moberg-03]*

“3. Page 5.15-4 of the EIR discusses the possibility of dam failure during a catastrophic failure. We request that SFPUC investigate possibility of early warning system, such as sirens with email alerts, to notify the residents and public agencies in anticipation of such emergencies. All future emergency planning and notification work should be coordinated with Central County Fire Department and San Mateo County Office of Emergency Services.

The early warning system should also be included during Peak Maximum Floods to ensure private and public properties are notified.” (*Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-07]*)

“To this end, we would request that an early warning system, such as sirens and email alerts, be included within the scope of this project.” (*Anthony Ranii, Hillsborough City School District [A_HillsCSD-03]*)

“The consequences if it doesn’t are incredibly catastrophic. First of all, my area gets totally wiped out. Mills Hospital has major damage. South School gets wiped out. All the kids there—there’s something like 225, 250 kids there. There are no warning sirens, which was a request on the Casitas Dam in Ventura County, which was a recommendation that was adopted when the dam was reconstructed there. And I suggest that be done here.

I’m going to finish up because it’s clear to me that you guys are stonewalling a lot of people in this community.

In addition, downtown Burlingame possibly and most probably downtown San Mateo will be wiped out. Furthermore, you’re spending 3- to \$4 billion on a system to make sure there’s water available to sell. That’s your inventory. As a public agency, you are a special fund, an enterprise fund, run like a business. That’s your inventory. I suggest that, when you make improvements to your buildings where you house your inventory, you make sure that those buildings or those systems will be in place.

A second opinion, which isn’t going to cost that much or take that much time, wouldn’t be a problem in this case.

Should the dam break, you will not have water to sell. Your bonds, which are backed by the PUC only, not the general credit of San Francisco, will go into default possibly. The Hillsborough bonds, which they are 42 million, will definitely go into default because we won’t have water to

sell because we have three days of water storage, and there won't be enough water after that to satisfy—we need to borrow as it is—as well as to pay off the bond holders who are looking for repayment. So I dare say that the consequences are catastrophic.

Now, this is not the first time I've mentioned all this. This has been mentioned before. I am not a crazy person. I do financial analysis for governments. I have multiple—I have several advanced degrees. And I strongly suggest that you at least listen to some of the people in this community who are actually trying to help you make sure this is a safe structure.

And if it's a safe structure, you have in your file—in case something happens, you've done the extra step." (Josh Cooperman [I_Cooperman1-08])

"It was about two years ago we came to this room and listened to a program on dams and dam safety. This dam was built in 1890. Its 120 years old. It's made out of concrete. Concrete fatigues.

At this meeting, they discussed the possibility of rebuilding this dam for the safety of San Mateo, Hillsborough, Burlingame. One of the reasons Mills Hospital was not built in the original state is because it is in the path of the flood if this dam collapses." (Fan Moberg [I_Moberg-02])

"My children went to South School, and they had dam safety drills all the time to be sure to get the children to high ground.

I am not sure that I would feel comfortable with this type of approach to bringing in—making the dam higher. I don't understand this whole thing scientifically. But to bring the dam higher, making more water up against this old, old dam doesn't make a whole lot of sense to me. If that dam goes, my house—I'm right in the middle of it." (Fan Moberg [I_Moberg-03])

Response

As part of its existing operations and independent of the proposed project, the SFPUC has an established *Crystal Springs Dam Emergency Action Plan* (SFPUC, 2008). The Emergency Action Plan (EAP) provides emergency response protocols and procedures as well as additional information about the LCSD that would be useful during an emergency. The plan includes emergency dam inspection procedures, emergency response actions, guidelines for preparing for emergencies, and routine inspection guidelines. The EAP identifies the following types of emergencies that could affect the dam and its operations: earthquake, severe storm or flood, fire, toxic spill, contamination of water supplies, hazardous spill or leak, and airplane crash.

The SFPUC's response to the above types of emergencies would depend on the severity of the event. If an emergency situation is identified or suspected, the SFPUC has established notifications as well as inspection and correction procedures to implement, as documented in the EAP. The SFPUC, as the dam owner, is responsible for determining and initiating the notification process of possible dam or reservoir failures. These notification procedures apply to the dam itself, as well as failure of dam appurtenances such as valves, forebays, and transmission pipes that would endanger life or property. In the event of an incident, depending on its seriousness, the SFPUC notification team

would contact the California Office of Emergency Services and the San Mateo County Office of Emergency Services. Notification of the public, including necessary warnings to downstream residents, would then occur as determined appropriate by these agencies.

For discussion of potential impacts in the dam inundation zone due to the proposed increase in reservoir water levels, please see Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Dam Safety Under Proposed Project Conditions*.

Project Costs and Revenues

Comment G5, Project Cost of Multiple Shifts

The following comment is included under Comment G5:

- *Kathrin Moore, San Francisco Planning Commission [A_SFPC1-01]*

“The question I have is, does the requirement for multiple shifts increase the cost of the project? So it’s labor-related costs, I gather?” (*Kathrin Moore, San Francisco Planning Commission [A_SFPC1-01]*)

Response

As explained by Tasso Mavroudis, SFPUC Project Manager, at the public hearing before the San Francisco Planning Commission on April 8, 2010, the need for multiple work shifts during construction of the project is predicated upon the need to ensure the structural integrity of the dam and to maintain customer deliveries during the construction period. These requirements were accounted for in the cost estimates developed for the project. In summary, although multiple shifts increase the cost of the project, they are an essential component of the project to ensure public safety and water supply reliability.

Comment G6, Cost of Seismic Studies

The following comments are included under Comment G6:

- *Joshua Cooperman [I_Cooperman2-02]*
- *Joshua Cooperman [I_Cooperman2-05]*

“2. The cost of the study is minimal compared to the dangers to your enterprise from not acting.

As an enterprise fund, your business is selling water to other agencies and to San Francisco residents. While I applaud your efforts and that of the State Seismic Safety Commission to proceed on upgrading your system, a paramount concern should be ensuring the integrity of the reservoir. Otherwise, the funds spent on the water delivery system improvements from the Sierra to Crystal Springs will be for naught. Without water revenues, there will be great financial pressure on your agency and that of the City and County. AND, without water to sell for the BAWSCA wholesalers, their jurisdictions will face economic consequences, both for the water enterprises as well as the general economy.” (*Joshua Cooperman [I_Cooperman2-02]*)

"3. The cost of any independent study is minimal and can be incorporated into your rate base. As for any timing delays, this study should be commenced immediately, particularly before the repairs begin, in the event changes to the contemplated repairs need occur due to findings from an engineering evaluation of the dam.

To provide objectivity, the local water agencies should also have their engineers review the independent findings.

4. Any independent findings would be available for inspection by future regulators, commissioners and interested parties, and could provide the Agency with justification that it left no stone unturned in ensuring the safety and integrity of its improvements program, this EIR process and the citizens of both San Francisco and the Peninsula. Anything less will only serve to emphasize and highlight potential deficiencies in your agency's process here and in its improvements program." (Joshua Cooperman [I_Cooperman2-05])

Response

As described in Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically in the subsection, *Dam Safety Under Existing Conditions*, the SFPUC conducts seismic and other safety studies as part of its ongoing maintenance, independent of the proposed project. The SFPUC's operating budget include costs for any necessary studies needed to maintain the safety of the system, and the budget allocations for such studies are determined as appropriate. See Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, for additional discussion regarding the need for additional seismic studies.

Comment G7, Water Revenues

The following comment is included under Comment G7:

- Joshua Cooperman [I_Cooperman2-04])

"As Hillsborough has over \$40 million in water and sewer debt outstanding, any loss of revenues to it will be highly detrimental, and directly adversely affect myself as a resident using the water, a ratepayer and a local citizen." (Joshua Cooperman [I_Cooperman2-04])

Response

Independent of the proposed project, the basic mission of the SFPUC is, in part:

To serve San Francisco and its Bay Area customers with reliable, high-quality and affordable water, while maximizing benefits from power operations and responsibly managing the resources entrusted to its care.

The proposed project and its objectives (Draft EIR page 3-4) are consistent with this basic objective. The SFPUC as part of its basic mission assumes the obligation to provide affordable water and to be fiscally responsible to its customers.

Opinions in Support of or Against the Project

Comment G8, Opinion Against the Project

The following comment is included under Comment G8:

- *Drew Shell, California Native Plant Society [O_CNPS1-01]*

“The attached comments go into more detail on our many deep and serious concerns regarding this project, but in summary we are opposed to the project as currently described...” (*Drew Shell, California Native Plant Society [O_CNPS1-01]*)

Response

The opinion of the commenter in opposition to the LCSDI project as currently proposed is acknowledged.

SFPUC Operating Procedures

Comment G9, Request for Internal Procedures of the SFPUC

The following comment is included under Comment G9:

- *Josh Cooperman [I_Cooperman1-03]*

“I also attended a BAWSCA meeting subsequently, about a year ago, and cited my concerns. At the time, staff of the PUC was in attendance at that BAWSCA meeting. And at that meeting, I mentioned some of my concerns having to do with operating procedures of the San Francisco PUC whereby the PUC does risk and cost benefit analyses. And in at least one case, when we had the creek overflowing because of water discharges, San Francisco – there were memos in the file saying that the PUC determined that it wouldn’t go the extra step, and it was a – they would just wait for litigation, which did occur.

And that litigation, the settlement was sealed, including the memos which were the subject of that litigation. And one of the requests tonight is that the PUC unseal those memos so residents of this town would understand some of the internal decision-making tenets of the PUC. And we would want some kind of understanding that those type of procedures, internal operating procedures, would apply in this case.” (*Joshua Cooperman [I_Cooperman1-03]*)

Response

This comment does not relate to the proposed project nor to the adequacy of the Draft EIR. During the rare instances when the SFPUC makes releases to lower San Mateo Creek from LCSD, either controlled releases (about once every 10 years) or uncontrolled spills (extremely rare), the SFPUC routinely contacts downstream stakeholders, including San Mateo County, Town of Hillsborough, California Department of Transportation (Caltrans), and the Office of Emergency Services. Under the proposed project or variant, the likelihood of controlled releases would remain the same as under the existing condition, but the likelihood of an uncontrolled spill would be lower. See Section 4.19,

Hydrology, and Chapter 3, Section 3.3, for further discussion. With regard to the commenter's request for information, the commenter is directed to the SFPUC's communications department regarding information on the operating procedures of the SFPUC. Specific requests for information will be provided consistent with the requirements of San Francisco Sunshine Ordinance (Chapter 67 of the San Francisco Administrative Code).

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4.2 Introduction and Background

The following comments and corresponding responses cover topics related to Chapter 2, Introduction, of the Draft EIR.

CEQA Process and Public Outreach

Comment INT1, Scoping Process

The following comment is included under Comment INT1:

- *Joan Bardet [I_Bardet-04])*

"My husband and I were not, to our knowledge, informed of any meetings for scoping of the EIR Draft report, although such were held, as we learned from speakers at the April 6, 2010, public hearing at Hillsborough Town Hall of the SFPUC dam project. Thus, perhaps our concerns may have been addressed previously." (*Joan Bardet [I_Bardet-04])*)

Response

Based on the mailing list for the LCSDI project, the Notice of Preparation (NOP) was sent to the commenter on January 2, 2007. The scoping process, described on Draft EIR page 2-10 (Vol. 1, Chapter 2, Section 2.4), was conducted to solicit public input regarding project-related issues and the scope of the EIR analysis. As described in the Draft EIR, the NOP was distributed to 1,450 elected officials, public agencies, and interested groups and individuals to inform them that an EIR would be prepared on the proposed project and begin the formal scoping process. Additional notification was provided through legal notices in the San Francisco Chronicle (run date January 2, 2007) and the San Mateo County Times (run date January 4, 2007), and a display ad in the San Mateo County Times (run

date January 10, 2007). The project scoping meeting was held on January 18, 2007 at South Hillsborough Elementary School. Copies of the NOP and comments received during the scoping period are included in Appendices A and B, respectively, of the Draft EIR.

With regard to public review of the Draft EIR, notices were distributed and published on March 2, 2010 (see **Response INT3**, below), and a public hearing was held on April 6, 2010 at the Hillsborough Town Hall. Based on the mailing list for the LCSDI project, the Notice of Availability of the Draft EIR was sent to the commenter on March 2, 2010.

Comment INT2, Addressing Scoping Comments

The following comment is included under Comment INT2:

- *Josh Cooperman [I_Cooperman1-02]*

"Since the first scoping meeting that occurred at South School four or five years ago, I have been questioning the staff of the PUC about the integrity, structural integrity, of the dam. And initially I requested that at the scoping meeting. I also wrote a card that was not in your report.

So I believe your report is deficient, at least the draft that I saw at the San Mateo Library, in including all of the comments provided by people since the first scoping meetings at South School going forward.

I also provided a comment at the Pipeline EIR.

I also provided written and oral comments at the Pipeline EIR which occurred at the golf course at 92 Hayne Road." (*Josh Cooperman [I_Cooperman1-02]*)

Response

The public scoping meeting for the LCSDI project was held on January 18, 2007 at the South Hillsborough School in Hillsborough, California. Appendix B of the Draft EIR contains copies of comments received during the scoping period, including comments received at the scoping meeting. The official transcript from the scoping meeting indicates that the commenter provided scoping comments related to: (a) the seismic stability of the LCSD; (b) the SFPUC's management of the riparian corridor along San Mateo Creek; and (c) flood hazards along lower San Mateo Creek. The comment regarding the seismic stability of the LCSD is addressed on Draft EIR page 3-7 (Vol. 1, Chapter 3, Section 3.4.1); and further information is provided in Section 12.1, General Comments, **Response G1**. The comment regarding the SFPUC's responsibility to manage the riparian corridor along lower San Mateo Creek is addressed on Draft EIR pages 5.13-57 to 5.13-59 (Chapter 5, Section 5.13); as part of the SFPUC's adopted *Peninsula Watershed Management Plan*, the SFPUC maintains a policy to preserve, protect, and enhance significant biological resources within the SFPUC-managed watershed, including portions of the riparian corridor along lower San Mateo Creek. The SFPUC's watershed property boundary along the riparian corridor extends to the Crystal Springs Road and Woodridge Road intersection. The comment regarding flood hazards along lower San Mateo Creek is addressed under Impact HY-6 on Draft EIR pages 5.15-36 and 5.15-37; additional discussion regarding flood hazards is provided in **Responses H4, H5, and H6**.

It is acknowledged that the commenter provided comments on the Draft EIR on the SFPUC's Crystal Springs Pipeline No. 2 Replacement Project (State Clearinghouse No. 2008112050). The reader is referred to the Comments and Responses document for that project⁹ for responses to those comments.

Comment INT3, Public Notice of Draft EIR

The following comment is included under Comment INT3:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-14]*

"Lastly, we feel that public notice of the project, and especially the time limit for public comment on the DEIR may not have been properly distributed to all stakeholders. As a recognized stakeholder, the SVBC was not noticed in a timely manner, especially San Mateo County's project, in order that it might participate in public process. Therefore it is our earnest request, in light of this breach of stakeholder outreach, that our comments be considered timely." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-14]*)

Response

A discussion of the environmental review process is provided on Draft EIR page 2-10 (Vol. 1, Chapter 2, Section 2.4). All public outreach efforts for the LCSDI project have been conducted in accordance with the requirements of the California Environmental Quality Act (CEQA), including the Notice of Availability of the Draft EIR, which was distributed to 1,700 elected officials, public agencies, regulatory agencies, and interested groups and individuals at the start of the 45-day public review period on March 2, 2010. In addition, on March 2, 2010, legal notices were published in the *San Mateo County Times* and in the *San Francisco Chronicle* describing the proposed project and the conclusions of the Draft EIR; how to obtain a copy of the Draft EIR; the date, time, and location of public hearings on the Draft EIR; and the process for submitting comments on the Draft EIR. Notices were also posted at the Lower Crystal Springs Dam and Sampling Station #5 project sites during the public review period. Full hardcopies of the Draft EIR were made available for public review and comments at: the San Francisco Planning Department, the San Francisco Main Library, and the San Mateo Main Library; and electronic copies of the document were made available for viewing on the internet.

The Crystal Springs Dam Bridge Replacement Project, sponsored by San Mateo County, is a separate project from the LCSDI project, as described on Draft EIR page 3-39 (Vol. 1, Chapter 3, Section 3.8). The Lead Agency for the Crystal Springs Dam Bridge Replacement Project is San Mateo County. The project sponsor for the LCSDI project is the SFPUC, and the San Francisco Planning Department is the lead agency for the LCSDI EIR. The San Francisco Planning Department was not involved in the public review process for San Mateo County's bridge replacement project, and the commenter is referred to the San Mateo County Planning and Building Department for questions regarding the noticing for that project.

⁹ For information on the Crystal Springs Pipeline No. 2 Replacement Project EIR, contact the San Francisco Planning Department regarding MEA Case No. 2005.0963E.

The San Francisco Planning Department accepted the comment letter dated April 14, 2010 from this commenter for inclusion in this Comments and Responses document.

4.3 Project Description

The following comments and corresponding responses cover topics related to Chapter 3, Project Description, of the Draft EIR. Table C&R 4.3-1 presents the responses and specific comments addressed in this section.

**TABLE C&R 4.3-1
INDEX OF RESPONSES TO COMMENTS – PROJECT DESCRIPTION**

RESPONSE	COMMENT												
	A_CDFG-01	A_CDFG-02	A_CDFG-03	A_CDFG-05	A_Caltrans-01	A_DSOD-01	A_BAWSCA-01	A_SFPC1-02	A_SFPC2-02	A_SFPC3-01	A_SFPC3-02	O_CNPS1-04	I_Lawrence-01
													I_Michael-01
													I_Face2-01
Individual Comments and Responses													
PD1, Definition of the Probable Maximum Flood									X				
PD2, Existing Operations										X			
PD3, Project Goals and Objectives		X									X		
PD4, Operating Goals						X							
PD5, Historical Design of the Dam													X
PD6, San Mateo Creek Contours on Construction Zone Figures			X										
PD7, Seasonal Restrictions for Construction							X						
PD8, Reservoir Storage Capacity								X					
PD9, System Operations During Construction												X	
PD10, Crystal Springs/San Andreas Transmission Upgrade Project	X												
PD11, San Mateo County Crystal Springs Dam Bridge (Skyline Boulevard Bridge) Replacement Project													X
PD12, CDFG Lake and Streambed Alteration Agreement			X										
PD13, Caltrans Encroachment Permit					X								
PD14, Dam Alteration Permit						X							

Project Background

Comment PD1, Definition of the Probable Maximum Flood

The following comment is included under Comment PD1:

- *Hisashi Sugaya, San Francisco Planning Commission [A_SFPC3-01]*

“Could you explain a little bit about this hundred-year flood or whatever it’s called?” (*Hisashi Sugaya, San Francisco Planning Commission [A_SFPC3-01]*)

Response

The 100-year flood is defined as the level of flood water expected to be equaled or exceeded every 100 years on average. In other words, it is a very large and infrequent flood event that has a 1 percent chance of being equaled or exceeded in any single year. The operational restrictions on Lower Crystal Springs Dam imposed by the DSOD are based on the Probable Maximum Flood (PMF), which is a much larger and rarer event than the 100-year flood.

The PMF event is discussed on Draft EIR pages 3-2 (Vol. 1, Chapter 3, Section 3.1) and 5.15-9 (Chapter 5, Section 5.15). As described in the Draft EIR, the PMF is an extremely unlikely flood occurring as a result of an extraordinarily large storm event. The PMF is the flood produced by the Probable Maximum Precipitation (PMP), which is the estimated greatest depth of precipitation that is physically possible at a particular geographical location. The PMF is not associated with a particular probability of occurrence; it is much larger than any flood that has occurred during the period of historical record. Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Purpose and Need for the Proposed Project*, for further description of the PMF.

Comment PD2, Existing Operations

The following comment is included under Comment PD2:

- *Hisashi Sugaya, San Francisco Planning Commission [A_SFPC3-02]*

“Well, how much of the water going into the reservoirs comes through Pulgas, for example, versus how much water, if there’s a big rain, comes down off the hillsides and fills the reservoir? Can’t you control the level by shutting down the amount that’s flowing in? Right. So it would have to be a fairly hefty amount of – ” (*Hisashi Sugaya, San Francisco Planning Commission [A_SFPC3-02]*)

Response

As discussed on Draft EIR page 5.14-4 (Vol. 1, Chapter 5, Section 5.15), Tuolumne River water from Hetch Hetchy Reservoir generally constitutes approximately 85 percent of the water stored in Crystal Springs Reservoir. The remaining 15 percent is a combination of

water transferred from the Pilarcitos Creek and Alameda Creek watersheds plus the local runoff from the Crystal Springs Reservoir (San Mateo Creek) watershed. In general, the SFPUC manages the amount of water stored in Crystal Springs Reservoir by controlling the inflow of Hetch Hetchy supplies into the reservoir and the outflow of water by pumping water from Crystal Springs Reservoir to San Andreas Reservoir. In addition, the SFPUC manages the water levels in Crystal Springs Reservoir during the rainy season to provide capacity to capture local runoff, to avoid uncontrolled spills (i.e., water over the spillway), and to minimize releases to San Mateo Creek (i.e., controlled releases through the release valves at the dam).

Project Purpose and Need

Comment PD3, Project Goals and Objectives

The following comments are included under Comment PD3:

- *Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-02]*
- *Drew Shell, California Native Plant Society [O_CNPS1-04]*

“We understand water from the Tuolumne River and the Alameda Creek watershed enters Crystal Springs Reservoir at the south end through the Pulgas Discharge Channel near the Pulgas Water Temple (pg 3-8 DEIR). We also understand this project is important for increasing seismic reliability during a major earthquake and for meeting DSOD requirements so that the water level in Lower Crystal Springs Reservoir may be increased.” (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-02]*)

“...this project must be held to a very high standard in terms of justifying its need as well as mitigating its impacts.” (*Drew Shell, California Native Plant Society [O_CNPS1-04]*)

Response

The commenter accurately states that water supplies from the Tuolumne River and Alameda Creek watersheds enter Crystal Springs Reservoir at the Pulgas Discharge Channel, located at the southern end of the reservoir. The commenter’s description of the project’s goals and objectives is also generally accurate; however, the following clarification is provided regarding the seismic benefits of the proposed project.

The purpose of the proposed project is described on Draft EIR page 3-2 (Vol. 1, Chapter 3, Section 3.1), and the project goals and objectives are stated on pages 3-5 and 3-6 (Section 3.3). As stated in the Draft EIR, the purpose of the LCSDI project is to lift the DSOD-imposed restrictions on the amount of water that can be stored in the reservoir associated with the safe passage of the PMF. The proposed project is a hydraulic upgrade that would modify the LCSD so that the PMF could pass safely over the dam’s spillway and through the stilling basin without endangering the safety of the dam and downstream areas. While the LCSDI project is not specifically a seismic improvements project, all proposed modifications to the dam and associated facilities would be constructed to meet current seismic standards. In addition, the increased water storage to

be provided by the project would contribute to the SFPUC's ability to meet the seismic reliability system performance objective of the overall Water System Improvement Program (WSIP), which is to deliver basic water service within 24 hours of a major earthquake and meet average-day demand within 30 days of a major earthquake (Draft EIR pages 2-6 and 3-6). The increased water storage provided by the LCSDI project would also assist the SFPUC in achieving system performance goals related to delivery reliability and water supply reliability (Draft EIR pages 2-6 and 3-6). Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Purpose and Need for the Proposed Project*, for further discussion.

Comment PD4, Operating Goals

The following comment is included under Comment PD4:

- *Nicole Sandkulla, Bay Area Water Supply and Conservation Agency [A_BAWSCA-01]*

"1. Section 1.4.2 Project Operations (pg. 1-12)

The text describes one operating objective is "to avoid uncontrolled spills and minimize releases to San Mateo Creek." Is there any specific regulatory or policy condition that quantifies the obligation of the SFPUC to operate the reservoir to accomplish this objective?" (*Nicole Sandkulla, Bay Area Water Supply and Conservation Agency [A_BAWSCA-01]*)

Response

The operational objective of the LCSDI project related to avoiding uncontrolled spills and minimizing releases to San Mateo Creek is consistent with the system operations strategy presented as part of the SFPUC's WSIP, of which the proposed project is a part. As described in the Draft EIR (Chapter 2, Section 2.2.2), the SFPUC adopted the WSIP in 2008, including the WSIP goals and objectives. The WSIP operations strategy specifies that local reservoirs, including Crystal Springs Reservoir, be operated so as to maintain and maximize local water storage for unplanned outages or drought needs (see WSIP Program EIR page 3-41, Vol. 1, Chapter 3, Section 3.7.1). By maximizing storage in Crystal Springs Reservoir and minimizing releases to San Mateo Creek, the SFPUC would improve its ability to deliver water to customers in San Mateo and San Francisco Counties in accordance with the specified quantitative WSIP level of service goals related to seismic reliability, delivery reliability, and water supply reliability. Refer to Table 2-1 on Draft EIR page 2-6 (Chapter 2, Section 2.2.2) for a summary of the WSIP level of service goals. In addition, the SFPUC minimizes releases to San Mateo Creek during the rainy season in order to avoid downstream flooding to the extent feasible.

Historical Design of the Dam

Comment PD5, Historical Design of the Dam

The following comment is included under Comment PD5:

- *Stephen Pace [I-Pace2-01]*

"I attended the initial meeting relevant to this project. And today I heard the drainage of the dam top because of the design features, that it will be filled in. The question I have relates to why were those cavities or voids left in the initial design? Because the engineer obviously was an excellent engineer for the dam to have survived the quakes that it did. And that's why I say it's really not so much of an environmental question as an engineering question that I would appreciate knowing." (*Stephen Pace [I-Pace2-01]*)

Response

As described on Draft EIR page 3-15 (Vol. 1, Chapter 3, Section 3.5), the LCSD was built using large interlocking concrete blocks. The tops of the blocks are not set at a uniform elevation, so there are depressions in the top of the dam. Rainwater, stormwater runoff, and water from hillside seeps have accumulated in one of the large depressions, creating a permanent artificial pond that currently provides breeding habitat for California red-legged frogs, a federally listed species. The presence of this listed species makes maintenance of portions of the dam extremely difficult. The proposed project would include drainage improvements on top of the dam to eliminate this artificial pond and to fill the depressed areas with crushed concrete and/or gravel, and construction of drainage channels that would drain to the downstream face of the dam. At the time of construction, the use of interlocking blocks was an innovative technique for building concrete dams capable of impounding large volumes of water. The depressions at the top of the dam, while part of the original dam, are more of a by-product of the dam's design and not fundamental to its structural integrity. Draining the artificial pond at the top of the dam and permanently removing it would not affect the structural integrity of the dam and may actually improve it. Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Design of Lower Crystal Springs Dam*, for further discussion.

Project Construction

Comment PD6, San Mateo Creek Contours on Construction Zone Figures

The following comment is included under Comment PD6:

- *Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-05]*

"Figure 5.1-3

The contour lines for San Mateo Creek should be included in Figure 5.1-3 so project boundaries which overlap San Mateo Creek are clear." (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-05]*)

Response

On Draft EIR page 5.1-13 (Vol. 1, Chapter 5, Section 5.1.4), Figure 5.1-3 (Overlapping Construction Zones for Cumulative Projects in LCSD Vicinity) presents similar information and uses the same base map as shown on Draft EIR page 3-21 (Vol. 1, Chapter 3, Section 3.6.2), Figure 3-8 (Staging and Storage Areas in the Lower Crystal Springs Dam Vicinity). In response to this comment, both figures are revised to include contour lines along the San Mateo Creek channel below the dam. The revised figures are presented in Chapter 5, Draft EIR Revisions, of this Comments and Responses document.

Comment PD7, Seasonal Restrictions for Construction

The following comment is included under Comment PD7:

- *Kathrin Moore, San Francisco Planning Commission [A_SFPC1-02]*

“I have a quick question. What do you describe as seasonal difficulties which constrain the time that you can construct? Is it the weather? Is it the spawning of fish or butterflies or whatever?”
(*Kathrin Moore, San Francisco Planning Commission [A_SFPC1-02]*)

Response

Seasonal restrictions on project construction activities are imposed to ensure that there is a functional spillway and stilling basin for the dam during the rainy season, avoid water quality impacts, and to minimize impacts on steelhead and other sensitive species during critical life stages. The proposed construction schedule is presented in Draft EIR page 3-21 (Vol. 1, Chapter 3, Section 3.6.1). From a dam safety perspective, the SFPUC would attempt to limit all construction activities at the base of the dam to the dry season—the period between April 15 and October 15—in order to have a functioning spillway and stilling basin during the rainy season to control the reservoir water releases. Extended nighttime and weekend construction hours are required to achieve the tight construction schedule.

As described on Draft EIR pages 5.13-143 to 5.13-145 (Vol. 1, Chapter 5, Section 5.13.7), dewatering and instream construction activities for the proposed new stilling basin have the potential to occur during a high sensitivity life stage for steelhead (juvenile emigration) in San Mateo Creek. However, Mitigation Measure M-BI-12a (Fish Rescue and Relocation) would minimize the potential for injury or mortality to juvenile steelhead, and implementation of this measure would reduce the impact to a less-than-significant level.

Project Operations

Comment PD8, Reservoir Storage Capacity

The following comment is included under Comment PD8:

- *Michael Antonini, San Francisco Planning Commission [A_SFPC2-02]*

"The other question I did have is, it looks like the work down at Upper Crystal Springs will allow our storing capacity to be higher in Upper Crystal Springs because you showed how far the water would move in the highest year, then, after that's completed....

Yes, but it will be back to where it could be and give us increased storage capacity, which is a big issue. So that's good." (*Michael Antonini, San Francisco Planning Commission [A_SFPC2-02]*)

Response

The commenter's observation that the proposed project would increase the storage capacity of Crystal Springs Reservoir is correct. The existing and with-project reservoir storage capacities are discussed on Draft EIR page 3-37 (Vol. 1, Chapter 3, Section 3.7). As discussed in the Draft EIR, project implementation would restore the historical water storage capacity of the reservoir from the current DSOD-restricted storage capacity, and under the proposed normal maximum operating reservoir levels, the average annual storage in Crystal Springs Reservoir would increase from 15.4 billion gallons to 17.8 billion gallons—an increase of 2.4 billion gallons.

Comment PD9, System Operations During Construction

The following comment is included under Comment PD9:

- *Steve Lawrence [I_Lawrence-01]*

"Water needs to be delivered throughout the period of WSIP's construction. Crystal Springs Reservoir is a key local reservoir. During its construction, will the project affect how much water the reservoir stores? Can release? With this project in construction (in 2011), please explain how the regional system will move sufficient water west, from mountains to Bay Area, what the risks are, and how risk of running dry will be minimized should an earthquake or other catastrophic event strike our area. Note that the Calaveras Dam project may be going, too; will storage there be diminished? Does that project, or others, have a combined effect on what water will be available should an earthquake strike during WSIP construction?" (*Steve Lawrence [I_Lawrence-01]*)

Response

The commenter is correct in noting that the SFPUC would continue to maintain customer deliveries during project construction. As described on Draft EIR page 3-37 (Vol. 1, Chapter 3, Section 3.7), during construction the SFPUC would reduce the reservoir water levels 2 to 4 feet below the current spillway elevation of 283.8 feet to reduce the potential for the reservoir to inundate the top of the dam construction area and spill over onto the stilling basin construction area. While doing so would reduce storage by about 1.5 billion

gallons for the 9- to 14-month construction period, this temporary reduction is not expected to affect customer deliveries. Project construction would not affect overall system operations, including how much water the reservoir can release, but since the majority of construction is scheduled for the dry season, no releases are expected to occur.

During the project construction period, the Bay Division Pipelines would continue to operate during the high demand season from May through September, and transmission of water supplies from the Hetch Hetchy system and Alameda Creek watershed to the Bay Area should not be affected. Total local storage would be reduced by less than 5 percent.

In the event of concurrent construction of the Calaveras Dam Replacement project with the LCSDI, the water supply from Calaveras Reservoir may be unavailable during the summer of 2011, but in anticipation of such an event, San Antonio Reservoir would be full and available for use. In an emergency situation, access to the water supply in Calaveras Reservoir could be restored in 7 to 10 days during the summer.

With respect to the overall effect of water availability in the event of an earthquake during construction, the SFPUC acknowledges the increase in risk that occurs when facilities are operating at less than capacity or are out-of-service during construction. The combination of maintenance activities and outages of multiple WSIP project facilities is being carefully scheduled to reduce these risks to a manageable level. For example, few WSIP construction projects would affect system operations during the summer of 2011, when demand will be highest; most construction and maintenance activities are scheduled for the spring and fall, when demand is much lower.

Coordination with Other Projects

Comment PD10, Crystal Springs/San Andreas Transmission Upgrade Project

The following comment is included under Comment PD10:

- *Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01]*

“Dam Operations

The Lower Crystal Springs Dam Improvement Project will be built in conjunction with the Crystal Springs/San Andreas Transmission (CS/SA) project. Since the CS/SA project includes the infrastructure necessary for releasing water from Lower Crystal Springs Reservoir to San Mateo Creek, we have addressed most facility operations in a previous letter dated December 17, 2009 to the Crystal Springs/San Andreas Transmission Upgrade Project, SCH#2008022054.” (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01]*)

Response

As described on Draft EIR page 3-41 (Vol. 1, Chapter 3, Section 3.8), the SFPUC is coordinating the design and construction of the LCSDI with several other projects in the immediate vicinity of the LCSD, including the SFPUC’s CSSA Transmission Upgrade

project. The comments submitted by the commenter on the Draft EIR for the CSSA Transmission Upgrade project (SCH #2008022054) were directly responded to in that EIR's Comments and Responses document, which was published on November 5, 2009 (see Chapter 2, Section 2.1, pages 2-11 to 2-35). The Final EIR on the CSSA Transmission Upgrade project was certified by the San Francisco Planning Department on April 22, 2010, and the project was approved by the SFPUC on May 11, 2010.

Comments submitted by the commenter on the Draft EIR for the CSSA Transmission Upgrade project pertained to fishery releases to San Mateo Creek. Please see Chapter 3 as well as **Responses H8** and **B19** in this Comments and Responses document for a discussion of those issues as they relate to the LCSDI project.

Comment PD11, San Mateo County Crystal Springs Dam Bridge (Skyline Boulevard Bridge) Replacement Project

The following comment is included under Comment PD11:

- *Darrell Michael [I_Michael-01]*

"I understand they will start to raise the roadwayisn't that in early 2011? I forgot the months."
(*Darrell Michael [I_Michael-01]*)

Response

Coordination with other local projects in the immediate vicinity of LCSD is discussed on Draft EIR pages 3-39 to 3-41 (Vol. 1, Chapter 3, Section 3.8) and pages 5.1-9 to 5.1-15 (Chapter 5, Section 5.1). As discussed in the Draft EIR, the SFPUC and San Mateo County are coordinating construction of the LCSDI and Crystal Springs Dam Bridge (Skyline Boulevard Bridge) Replacement projects, respectively, to minimize the time the Skyline Boulevard Bridge would be out of service and traffic diversions in place. Construction schedules for cumulative projects in the vicinity with overlapping project sites and construction schedules are shown in Figure 5.1-2 (pages 5.1-9 and 5.1-10). The current schedule (subject to change) shows demolition of the Skyline Boulevard Bridge beginning in late 2010.

Regulatory Permits and Approvals

Comment PD12, CDFG Lake and Streambed Alteration Agreement

The following comment is included under Comment PD12:

- *Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-03]*

"For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Lake and Streambed Alteration Agreement (LSAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of an LSAA is subject to CEQA. DFG, as a responsible agency under CEQA, will consider the CEQA document

for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. To obtain information about the LSAA notification process, please access our website at <http://www.dfg.ca.gov/habcon/1600/>; or to request a notification package, contact the Lake and Streambed Alteration Program at (707) 944-5520." (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-03]*)

Response

This comment describing the regulatory authority of the CDFG and the project conditions requiring a Section 1602 Lake and Streambed Alteration Agreement is acknowledged. Regulatory permits and approvals that must be acquired prior to project construction activities, including the Lake and Streambed Alteration Agreement, are listed on Draft EIR pages 3-41 and 3-42 (Vol. 1, Chapter 3, Section 3.9).

Comment PD13, Caltrans Encroachment Permit

The following comment is included under Comment PD13:

- *Lisa Carboni, California Department of Transportation [A_Caltrans-01]*

"Encroachment Permit

Any work or traffic control within the State Right-of-Way (ROW) requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: <http://www.dot.ca.gov/hq/traffops/developserv/permits/>

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked A TIN: Michael Condie, Mail Stop #5E." (*Lisa Carboni, California Department of Transportation [A_Caltrans-01]*)

Response

This comment describing the requirement to obtain an encroachment permit from the California Department of Transportation (Caltrans) for any construction work or traffic control within a state right-of-way is acknowledged. Regulatory permits and approvals that must be acquired prior to project construction activities are listed on Draft EIR pages 3-41 and 3-42 (Vol. 1, Chapter 3, Section 3.9). Because the LCSDI project is not expected to involve construction or traffic control within a state right-of-way, an encroachment permit from Caltrans is not believed to be necessary at this time. However, if project conditions require construction or traffic control within a state right-of-way, the SFPUC will abide by the provisions of the encroachment permit.

As indicated on Draft EIR page 3-42, the proposed modification of the Caltrans-owned 30-inch stormwater drainage pipe on the southern dam abutment is anticipated to require a permit or approval from Caltrans. Potential impacts on this Caltrans pipe are analyzed in Impacts UT-1 and UT-2 (Vol. 1, Chapter 5, Section 5.11). Mitigation Measure

M-UT-1 (Coordinate Final Construction Plans with Affected Utilities) would require that the SFPUC coordinate final construction plans and specifications with Caltrans to avoid damage and disruption of service during project construction activities.

Comment PD14, Dam Alteration Permit

The following comment is included under Comment PD14:

- *Michael G. Waggoner, California Department of Water Resources, Division of Safety of Dams [A_DSOD-01]*

"We have reviewed the subject Notice for this project which includes the alteration of Lower Crystal Springs Dam, which is under our jurisdiction for dam safety. The City of San Francisco has submitted an alteration application for this dam. We are currently reviewing the submitted information and will resolve all dam safety related issues prior to approving the application. Sharon Tapia, our Design Engineering Branch Chief, is responsible for the application process and can be reached at (916) 227-4660." (*Michael G. Waggoner, California Department of Water Resources, Division of Safety of Dams [A_DSOD-01]*)

Response

This comment regarding the DSOD's jurisdiction over the LCSD is acknowledged. In response to this comment, the description of DSOD approvals on Draft EIR page 3-42 (Vol. 1, Chapter 3, Section 3.9) is revised as follows to clarify the DSOD's role with respect to project construction and operations:

State

- **California Department of Water Resources, Division of Safety of Dams:** The DSOD conducts a thorough review of plans and specifications to ensure the dam modifications meet all minimum requirements for dam safety prior to issuing a Dam Alteration Permit. After issuing the permit, the DSOD oversees construction activities to ensure the work is done in accordance with the approved plans and specifications. Following construction and during project operations, the DSOD would continue regulating the dam to ensure dam safety, including performing annual inspections and periodically reviewing the stability of the dam and its major appurtenances.

This revision does not change the analysis or conclusions presented in the Draft EIR.

4.4 Plans and Policies

No comments were received on topics related to Chapter 4, Plans and Policies, of the Draft EIR.

4.5 Land Use

No comments were received on topics related to Chapter 5, Section 5.2, Land Use, of the Draft EIR.

4.6 Aesthetics

No comments were received on topics related to Chapter 5, Section 5.3, Aesthetics, of the Draft EIR.

4.7 Population and Housing

No comments were received on topics related to Chapter 5, Section 5.4, Population and Housing, of the Draft EIR.

4.8 Cultural and Paleontological Resources

The following comments and corresponding responses cover topics related to Chapter 5, Section 5.5, Cultural and Paleontological Resources, of the Draft EIR. **Table C&R 4.8-1** presents the responses and specific comments addressed in this section.

TABLE C&R 4.8-1
INDEX OF RESPONSES TO COMMENTS – CULTURAL AND PALEONTOLOGICAL RESOURCES

RESPONSE	COMMENT				
	A_SFHPC-01	A_SFHPC-02	A_SFHPC-03	A_SFHPC-04	A_SFHPC-05
Individual Comments and Responses					
C1, Interpretive Panel Recommendations	X				
C2, Nomination of the LCSD and South Crystal Springs Cottage to the NRHP		X			
C3, Level 1 HAER Recordation			X		
C4, Opinion Regarding Evaluation of Retaining Wall				X	
C5, Historic Context Discussion in HCAASR					X

Historic Resources

Comment C1, Interpretive Panel Recommendations

The following comment is included under Comment C1:

- *Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-01]*

“The [Historic Preservation Commission] would like to include discussion of the history of Crystal Springs Valley as part of the interpretive panels that the SFPUC is proposing to develop as part of mitigation measures for historical resources impacts on the Lower Crystal Springs Dam.” (*Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-01]*)

Response

In response to this comment, Mitigation Measure M-CP-1a (HAER Recordation and Public Interpretation) in the Draft EIR is amended to specifically include the requested information. The third paragraph of Mitigation Measure M-CP-1a on Draft EIR page 5.5-27 (Vol. 1, Chapter 5, Section 5.5) and pages 6-7 (Chapter 6, Section 6.5) is revised as follows:

The SFPUC shall also develop interpretive panels for the LCSD. The panels shall include a history of the resource and some drawings or photographs depicting the unique design and history of the dam. The panels shall also include a brief history of Crystal Springs Valley prior to completion of the dam and reservoir. As appropriate, information about the relationship between the dam and OS-1 shall be included. The panels shall be displayed at publicly accessible areas adjacent to the dam. The objective of the interpretive panels is to increase local and regional public awareness of this resource as well as awareness of the SFPUC’s efforts to educate citizens about the history of the regional water system.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Comment C2, Nomination of the LCSD and South Crystal Springs Cottage to the NRHP

The following comment is included under Comment C2:

- *Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-02]*

“The Draft EIR indicates that both the Lower Crystal Springs Dam and the South Crystals Springs Cottage are eligible for listing in the National Register of Historic Places (NRHP). As the responsible agency, the SFPUC should nominate both the Lower Crystal Springs Dam and the South Crystal Springs Cottage to the NRHP.” (*Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-02]*)

Response

In addition to implementing Mitigation Measures M-CP-1a (HAER Recordation and Public Interpretation) and M-CP-1b (Historic Resources Protection Plan), as specified on

Draft EIR pages 5.5-27 and 5.5-28, the SFPUC will review and consider initiating nomination of the LCSD and the South Crystal Springs Cottage to the National Register of Historic Places. Potential future nomination of these structures to the National Register would not change the conclusions in the EIR, as they would remain historic resources with or without this designation.

Comment C3, Level 1 HAER Recordation

The following comment is included under Comment C3:

- *Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-03]*

"The HPC recommends that if the original construction drawings of the Lower Crystal Springs Dam are not available, then the mitigation measures should include Level 1 recordation as part of the Historic American Engineering Record (HAER) report (Level 1 HAER recordation includes measured drawings)." (*Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-03]*)

Response

In response to this comment, Mitigation Measure M-CP-1a (HAER Recordation and Public Interpretation) on Draft EIR page 5.5-27 (Vol. 1, Chapter 5, Section 5.5) and page 6-6 (Vol. 1, Chapter 6, Section 6.5) is revised as follows:

There will be three main tasks: gather data, prepare photographic documentation, and prepare a written historical and descriptive report. Photographic documentation shall include 4- by 5-inch negatives in labeled sleeves, 8- by 10-inch prints mounted on labeled photo cards, and an index to the photographs. Photographs shall be taken of the LCSD's character-defining features, including but not limited to the parapet wall, spillway, stilling basin, and abutments, as well as the historical setting of the dam. The ~~research report~~ shall include possible photographic reproduction of any valuable engineering blueprints original construction drawings, if available. If original construction drawings of the LCSD are not available, then the HAER report shall include measured drawings (HAER Level 1).

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Comment C4, Opinion Regarding Evaluation of Retaining Wall

The following comment is included under Comment C4:

- *Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-04]*

"The HPC supports the mitigation measure to evaluate the condition of the retaining wall along the western edge of the South Crystal Springs Cottage property and if found to be necessary, to relocate the retaining wall." (*Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-04]*)

Response

The commenter's support of Mitigation Measure M-CP-6 (Conduct a Geotechnical Study to Evaluate the Condition of the Retaining Wall, and if Necessary, Relocate and Extend the South Crystal Springs Cottage Retaining Wall) is acknowledged.

Historic Context

Comment C5, Historic Context Discussion in HCAASR

The following comment is included under Comment C5:

- Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-05]

"The Historic Context, Architectural and Archaeological Survey Report for the Lower Crystal Springs Dam Improvements Project used to support the analysis in the Draft EIR refers to "slavery" that occurred during the Mission San Francisco period between the Spanish ruling class and the Native Americans. The Spanish used a feudal system which intended to convert Native Americans to Catholicism, and as such, the use of the term "slavery" is inappropriate. In addition, the report does not include discussion of how the Native Americans were treated by the Americans during the post-Mission period." (Charles Edwin Chase, San Francisco Historic Preservation Commission [A_SFHPC-05])

Response

In response to this comment, the *Historic Context, Architectural and Archaeological Survey Report for the Proposed Lower Crystal Springs Dam Improvements Project* (ENTRIX, 2009), which is found in Appendix F of the Draft EIR (Vol. 2), is revised to remove any mention of the word "slavery." However, because this word is not used in the Draft EIR, no text changes to the Draft EIR itself are necessary.

The report is also revised to include a brief discussion in the report of how the Native Americans were treated during the post-Mission period. Because the Draft EIR does not discuss the treatment of Native Americans during the post-Mission period, no text amendments to the Draft EIR itself are proposed regarding this subject. These revisions to the background technical report do not change the analysis or conclusions presented in the Draft EIR.

The second full paragraph on page 23 of the *Historic Context, Architectural and Archaeological Survey Report* and the first full paragraph on page 24 of that report (corresponds to pages F-29 and F-30, respectively, in Appendix F in the Draft EIR) are revised as follows:

2.2.2 Mission San Francisco (1776-1833)

After the establishment of Mission San Francisco in 1776, the lands of the San Francisco peninsula came under control of the church. In the San Pedro Valley, west of the APE, an agricultural and ranching outpost was established in 1786 on a former indigenous village site. Such enterprises were operated by Native American

“neophytes,” who were brought to the missions by a combination of attraction techniques and the frequent use of violence by Spanish soldiers to keep rebellious tendencies under control. The techniques used to attract the Indians (new foods, new animals, new technology, new religious rites, grand buildings and new clothes, beads and other personal items), were important, but so was the coercion. The resulting mission system was a combination of feudal religious commune and ~~slavery~~ forced labor, whose Indian inmates were the ~~slave~~ unpaid laborers and the Spanish were the ruling class. Poor working conditions and lack of resistance to European diseases led to frequent epidemics, which struck the San Pedro settlement in 1791 and led to its abandonment soon thereafter.

... The other ranchos in the area were granted in the 1840s. The 6,000 acre Rancho San Mateo, in the northwest portion of the project area, had previously been held in reserve by the government as a potential zone for resettlement of Native Americans. As occurred during the Mission Period described above, Native Americans were also mistreated during the Mexican Period and Early American Periods.

The reference citation of this cultural resources report, found on Draft EIR page 5.5-33 (Vol. 1, Chapter 5, Section 5.5), has been amended as follows to reflect these changes to the text of the report:

ENTRIX/MSE JV, *Final Historic Context, Architectural and Archaeological Resources Inventory Report for the Proposed Lower Crystal Springs Dam Improvement Project*. Prepared for the San Francisco Public Utilities Commission, 2009- (as amended, 2010).

These revisions do not change the analysis or conclusions presented in the Draft EIR.

4.9 Transportation and Circulation

The following comments and corresponding responses cover topics related to Chapter 5, Section 5.6, Transportation and Circulation, of the Draft EIR. See Section 4.14, Recreation, for all comments and corresponding responses related to bicycle transportation.

Vehicular Access and Parking

Comment T1, Impacts on Local Roadways

The following comment is included under Comment T1:

- M. Naughton [I_Naughton-01]

“Does the EIR just released on this project include any maps indicating how local roads will be affected? If so, in what section of the EIR? Thank you.” (M. Naughton [I_Naughton-01])

Response

An analysis of project-related construction impacts on regional and local roadways is presented on Draft EIR pages 5.6-11 to 5.6-29 (Vol. 1, Chapter 5, Section 5.6, Transportation and Circulation). The key roadways in the project area are shown in Figure 5.6-1 (page 5.6-2), and the proposed construction detours are shown in Figure 5.6-2 (page 5.6-13).

Comment T2, Parking Impacts

The following comment is included under Comment T2:

- *Darrell Michael [I_Michael-02]*

“The parking will be a huge issue. We truly need that little parking lot, just south of the entrance to Sawyer Camp. Will there be anything they can do to make room for about 15 cars when they have to revamp that area? Maybe we could all chip in for a bus bridge or such... just an idea.”
(*Darrell Michael [I_Michael-02]*)

Response

Construction staging and storage areas are described on Draft EIR pages 3-20 to 3-26 (Vol. 1, Chapter 3, Section 3.6.2.2). The vista point parking lot located near the southern Sawyer Camp Trailhead would be closed for public parking and utilized for construction staging (Staging Area 5) throughout the duration of construction activities. The vista point parking lot is the only suitable staging area for construction activities at the top of the dam. Related parking impacts are analyzed under Impact TR-4 on Draft EIR pages 5.6-21 and 5.6-22 (Chapter 5, Section 5.6). With the exception of the 11 spaces at the vista point parking lot, project construction activities would not affect parking in the vicinity of the Sawyer Camp Trailhead. Vehicle parking would remain available along the shoulders of Skyline Boulevard and Crystal Springs Road. Thus, due to the availability of alternative parking, it was concluded that the temporary loss of 11 parking spaces would not substantially affect parking conditions in the area, and the impact of parking space displacement was determined to be less than significant. Under CEQA, mitigation for impacts that are less than significant is not required.

4.10 Noise and Vibration

No comments were received on topics related to Chapter 5, Section 5.7, Noise and Vibration, of the Draft EIR.

4.11 Air Quality

No comments were received on topics related to Chapter 5, Section 5.8, Air Quality, of the Draft EIR.

4.12 Greenhouse Gases

Project impacts related to greenhouse gas emissions are presented in Chapter 5, Section 5.8, Air Quality, of the Draft EIR. No comments related to greenhouse gases were received.

4.13 Wind and Shadow

No comments were received on topics related to Chapter 5, Section 5.13, Wind and Shadow, of the Draft EIR.

4.14 Recreation

The following comments and corresponding responses cover topics related to Chapter 5, Section 5.10, Recreation, of the Draft EIR, including all comments and responses related to recreational bicycling and bicycle transportation. **Table C&R 4.14-1** presents the responses and specific comments addressed in this section.

TABLE C&R 4.14-1
INDEX OF RESPONSES TO COMMENTS – RECREATION

RESPONSE	COMMENT																
	O_SVBC-01	O_SVBC-02	O_SVBC-03	O_SVBC-04	O_SVBC-05	O_SVBC-06	O_SVBC-07	O_SVBC-08	O_SVBC-09	O_SVBC-10	O_SVBC-11	O_SVBC-12	O_SVBC-13	O_SVBC-15	O_SVBC-16	O_SVBC-17	I_Michael-02
Individual Comments and Responses																	
R1, Bikeway Designations and Mapping						X							X				
R2, Adequacy of Bicycle Counts																X	
R3, Impaired Access to Recreational Trails																	X
R4, Reduced Parking for Recreationists																X	
R5, Conflicts with Bicyclists	X								X								
R6, Increased Distance and Grade of Proposed Bicycle Detours			X								X						
R7, Adequate Signage for Bicycle Detours								X									
R8, Request for I-280 Bicycle Detour		X										X					
R9, Ralston Trail Conditions and Requested Improvements				X	X	X	X			X					X		
R10, Increased Safety Hazards for Bicyclists and Recreationists									X				X				

Existing Conditions for Bicyclists

Comment R1, Bikeway Designations and Mapping

The following comments are included under Comment R1:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-06]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-15]*
- “• The section of the Ralston trail near Cañada is about 8-feet wide with steep grades and sharp corners. The sight-lines are limited. This section of the trail probably does not meet the standards for a Class I bike facility outlined in the CALTRANS Highway Design Manual, Chapter 1000 and consequently should be consider potentially hazardous.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-06]*)
- “1. The County Bike map found on the C/CAG website has errors.
- There are no bike lanes (Class II) on Ralston from Polhemus to Lyall/Pullman,
 - The bike lane on Polhemus is not continuous (it probably stops at the boundary between the City and County line. (Page 5.6-6)” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-15]*)

Response

Designated bikeways in the project area, shown in Figure 5.10-1 on Draft EIR page 5.10-4 (Vol. 1, Chapter 5, Section 5.10), are based on the 2009 San Mateo County Bicycle Maps prepared by the City/County Association of Governments (C/CAG) of San Mateo County. They are presented to provide background information on the numerous bikeways in the project area and to inform the analysis of the potential effects on bikeways associated with the temporary closure of Skyline Boulevard during construction. The analysis under Impact RE-1 in the Draft EIR (pages 5.10-12 to 5.10-17) concluded that implementation of Mitigation Measures M-RE-1 (Notify Bicycle Organizations of Detours) and M-TR-1 (Traffic Control Plan) would reduce the potential impacts on bicyclists to a less-than-significant level. Consistency issues with respect to the bikeway standards of the Caltrans Highway Design Manual or minor errors in the C/CAG San Mateo County Bicycle Map, if any, would not change the analysis or conclusions presented in the Draft EIR. See **Responses R6, R7, and R9** for additional discussion regarding the proposed bicycle detour routes.

Comment R2, Adequacy of Bicycle Counts

The following comment is included under Comment R2:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-17]*
- “3. The statistics listed in Table 5.6-3 are questionable. It states that the numbers are counts for the highest one-hour interval for a Sunday and a Weekday. It also states that the sampling

time covered a 2 hour period sometime each in May and August. We are left wondering whether the total field time was 8 hours or, could it be more; that is the samples were done over 4 Sundays (or Wednesdays) in both May and August. If it is the former, then these statistics could be considered meaningless as it is possible that, for instance, extremely hot weather could have minimized bike traffic for the small sampling time.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-17]*)

Response

The bicycle counts presented in Table 5.6-3 (Draft EIR page 5.6-5, Vol. 1, Chapter 5, Section 5.6) are based on field surveys conducted on multiple weekdays and weekends, including five weekdays and two Sundays, during sunny days with varying temperatures. Additional bicycle counts were also conducted on a Saturday. The bicycle counts selected for presentation in Table 5.6-3 reflect conditions when bicycle counts were highest.

Impeded Access to Recreational Facilities

Comment R3, Impaired Access to Recreational Trails

The following comment is included under Comment R3:

- *Margo & Steve Pace [I_Pace1-01]*

“Very concerned with any closure that would affect access to the Sawyer Camp trail.” (*Margo & Steve Pace [I_Pace1-01]*)

Response

Project-specific impacts on recreational trails during construction activities are analyzed under Impact RE-1 on Draft EIR pages 5.10-12 to 5.10-18. As described in the Draft EIR, the Sawyer Camp Trail and all other recreational trails in the project vicinity would be publicly accessible during the 14-month project construction period. Although vehicular access to the southern entrance to the Sawyer Camp Trailhead would be temporarily impeded by the closure of a 1,300-foot segment of Skyline Boulevard between the dam and Bunker Hill Drive for up to 32 months (i.e., due to construction of the LCSDI project in conjunction with construction of San Mateo County’s Crystal Springs Dam Bridge Replacement project), vehicular access to the trailhead would be maintained via Crystal Springs Road and Skyline Boulevard north of the dam. Recreationists could also elect to avoid the construction zone by parking at the northern trailhead.

Temporary cumulative impacts on recreational trails due to the overlapping construction schedules and locations of the LCSDI project and other projects in the vicinity are analyzed under Impact C-RE on Draft EIR pages 5.10-19 to 5.10-23. Implementation of Mitigation Measure M-C-RE (Coordinate Trail Access for Sawyer Camp Trail during Construction) would help to reduce the severity of cumulative impacts associated with access to and parking for the Sawyer Camp Trail during construction of the LCSDI

project, the SFPUC Crystal Springs/San Andreas Transmission Upgrade project, and the San Mateo County Crystal Springs Dam Bridge Replacement Project. However, the Draft EIR determined that these cumulative impacts would be significant and unavoidable, even with implementation of mitigation.

Comment R4, Reduced Parking for Recreationists

The following comment is included under Comment R4:

- *Darrell Michael [I_Michael-02]*

“The parking will be a huge issue. We truly need that little parking lot, just south of the entrance to Sawyer Camp. Will there be anything they can do to make room for about 15 cars when they have to revamp that area? Maybe we could all chip in for a bus bridge or such... just an idea.”
(*Darrell Michael [I_Michael-02]*)

Response

Parking impacts associated with closure of the vista point parking lot located near the southern Sawyer Camp Trailhead are analyzed under Impact TR-4 on Draft EIR pages 5.6-21 and 5.6-22 (Chapter 5, Section 5.6). With the exception of the 11 spaces at the vista point parking lot, project construction activities would not affect parking in the vicinity of the Sawyer Camp Trailhead. Vehicle parking would remain available along the shoulders of Skyline Boulevard and Crystal Springs Road. Thus, due to the availability of alternative parking, it was concluded that the temporary loss of 11 parking spaces would not substantially affect parking conditions in the area, and the impact of parking space displacement was determined to be less than significant. Under CEQA, mitigation for impacts that are less than significant is not required. Please refer to **Response T2** in Section 4.9, Transportation and Circulation, of this Comments and Responses document for additional responses to concerns regarding reduced parking availability during project construction activities.

Impacts on Bicycle Transportation and Recreational Bicycling

Comment R5, Conflicts with Bicyclists

The following comments are included under Comment R5:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-01]*
- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-09]*

“The closure of this key route for nearly 3 years will impact cyclists far more than noted in the DEIR. The DEIR suggests that cyclists have two alternatives to detour around the construction site: Either using a combination of the Ralston multi-use trail, Polhemus and Crystal Springs; or using a combination of Bunker Hill, Polhemus and Crystal Springs.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-01]*)

- “• The DEIR notes that weekend parking is primarily along the shoulders of Skyline and Crystal Springs. The DEIR needs to consider this area more than just a parking lot as it is a staging area for the popular Sawyer Camp trail. Users will be paying attention to numerous items such as taking their bikes from the car, adjusting clothing, and controlling their kids. They may not be paying attention to the occasional large trucks associated with the construction; it is important that the truck drivers be made well aware of this hazard.
- At the bottom of Page 5.6-19, the DEIR makes a confusing or misleading statement; *“However, on weekends (when bicycle travel is greater), the potential for conflicts from increased truck traffic on Crystal Spring Road would be greater.... Implementation..., which would require post ... detour signs ... of nearby recreational facilities ... would reduce this impact....”*. Cyclists and trucks will still need to share the road at many places since the proposed detour does not separate the two groups of users. We are concerned that the signs will do nothing to physically reduce the conflict.” (Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-09])

Response

As noted in the Draft EIR, the total duration of the road closure is estimated at 32 months, which accounts for construction activities associated with the LCSDI project (up to 14 months) as well as San Mateo County’s Crystal Springs Dam Bridge Replacement project (6 months for bridge demolition prior to LCSDI construction activities, and 12 months after LCSDI construction activities to construct the replacement bridge) (see Draft EIR page 5.1-9 in Vol. 1, Chapter 5, Section 5.1.4.2). If construction of the two projects by the SFPUC and San Mateo County were not coordinated, the length of time the Skyline Boulevard Bridge would be out of service would be greater.

The commenter’s description of the proposed bicycle detours is correct. As described on Draft EIR pages 5.6-12 and 5.6-13 and depicted in Figure 5.6-2 on page 5.6-13 (Chapter 5, Section 5.6), southbound bicycle traffic on Skyline Boulevard north of the bridge would be directed east onto Crystal Springs Road, south onto Polhemus Road, and west onto the Ralston Trail towards Skyline Boulevard. Northbound bicycle traffic south of the bridge would have the option to head east using either Bunker Hill Drive or the Ralston Trail, head north at Polhemus Road, and turn west onto Crystal Springs Road towards Skyline Boulevard. See **Responses R6, R7, and R9** for additional discussion of the proposed bicycle detours.

Project impacts on recreational bicycling are analyzed under Impact RE-1 on Draft EIR pages 5.10-13 to 5.10-18 (Vol. 1, Chapter 5, Section 5.10). The Draft EIR recognizes that Skyline Boulevard is a popular bicycling route that provides access to many recreational facilities in the project area. Despite the abundance of recreational bicycle routes in the LCSD vicinity and in the Peninsula, generally, the Draft EIR conservatively considers the project-specific effects on recreational bicycling to be a significant impact. However, this impact would be reduced to a less-than-significant level through implementation of Mitigation Measures M-TR-1 (Traffic Control Plan) and M-RE-1 (Notify Bicycle Organizations of Detours). Mitigation Measure M-TR-1 would require that the SFPUC coordinate with San Mateo County on traffic and bicycle detours to ensure detours

remain accessible and safe throughout construction. The Traffic Control Plan would include provisions to ensure that adequate signage is posted to alert cyclists of the road closures and detour routes; haul trucks be restricted from using Bunker Hill Drive between the I-280 ramps and Polhemus Road to avoid potential conflicts with bicyclists; truck trips on Crystal Springs Road and Polhemus Road be avoided during school drop-off and pickup hours for the Odyssey School; and that the SFPUC advise the public of impending construction activities through implementation of a public information program. Mitigation Measure M-RE-1 would require that the SFPUC work with San Mateo County to notify local bicycle organizations of the construction activities and bicycle detour routes. See Response R10 for additional discussion regarding safety protocols that would be implemented during construction.

As discussed on Draft EIR pages 5.10-19 to 5.10-23, the proposed project in combination with other projects in the vicinity would result in significant and unavoidable cumulative impacts on recreational bicycling due to overlapping construction schedules and project sites. Overlapping construction activities in the LCSD vicinity would result in increased traffic volumes (particularly truck traffic), detours, and lane restrictions, all of which would increase potential traffic hazards for bicyclists. In addition, construction activities for the LCSDI and Crystal Springs Dam Bridge Replacement projects would require closure of a 1,300-foot segment of Skyline Boulevard between Crystal Springs Road and Bunker Hill Drive for 32 months during construction. The Draft EIR considered this a significant unavoidable impact. Implementation of Mitigation Measure M-C-TR (Coordinated Peninsula Regional Transportation Management Plan), which would require coordination of individual traffic control plans for non-SFPUC and SFPUC projects in the vicinity, would reduce the severity of this impact, but not to a less-than-significant level because of the extent and duration of the impacts. Mitigation Measure M-C-TR would require the development of circulation and detour plans that address full and partial roadway closures; signage and flagging to guide vehicular traffic in the vicinity of the construction zone; and designated haul routes. There are no other feasible mitigation measures that would reduce this impact to a less-than-significant level.

Comment R6, Increased Distance and Grade of Proposed Bicycle Detours

The following comments are included under Comment R6:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-03]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-11]*
- “• Both of the proposed detours nearly double the distance and the climbing for cyclists.
- There is a quarter mile section of Bunker Hill with a grade in excess of 10% which is considered extremely steep (note that maximum grades on Interstate Highways rarely, if ever, exceed 6%). Many cyclists will have to dismount and walk.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-03]*)

“2. Recognition that Bunker Hill is not a suitable alternative to many cyclists as it is too steep.”
(*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-11]*)

Response

The commenter correctly states that the proposed bicycle detours would increase travel distances for cyclists, although the additional distance would vary depending on the route taken and the final destination. The commenter also correctly states that the Bunker Hill Drive detour could be too steep for some bicyclists; this is also acknowledged on Draft EIR page 5.6-12 (Vol. 1, Chapter 5, Section 5.6). As stated in the Draft EIR, in lieu of using Bunker Hill Drive, northbound bicycle traffic could elect to connect to Polhemus Road using the Ralston Trail, which is less steep.

Comment R7, Adequate Signage for Bicycle Detours

The following comment is included under Comment R7:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-08]*

“• The detour needs to be well marked for cyclists who are not familiar with area. As an example, the Ralston trail is not clearly marked in advance of its entrance for northbound cyclists on Cañada Road.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-08]*)

Response

This comment regarding the importance of clearly marked detour routes is consistent with the objectives of Mitigation Measure M-TR-1 (Traffic Control Plan). Implementation of Mitigation Measure M-TR-1 (Traffic Control Plan) would require that the SFPUC coordinate with San Mateo County to ensure the designated detour routes remain accessible during construction activities and that adequate signage and notification of the detours are adequately maintained (see Draft EIR pages 5.6-24 to 5.6-25, Chapter 5, Section 5.6).

Comment R8, Request for I-280 Bicycle Detour

The following comments are included under Comment R8:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-02]*
- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-12]*

“What is not considered, but provides the most direct route, is to allow cyclists use of the shoulders of I-280 between Bunker Hill and Black Mountain Roads. This alternative route would be advantageous to many cyclists.

The use of the shoulders of I-280 merits the highest consideration. Currently, cyclists have access to two sections of I-280 just north of the dam site: Trousdale to Hillcrest, and Larkspur to SR35/Skyline. Consequently, the use of the freeway shoulder by cyclists does have a precedent with CALTRANS. As with these two examples, the Bunker Hill to Black Mountain section is a simple on/off the freeway with no crossings of interchanges, other than a closed rest-stop northbound, and

can be safely done. Motor vehicle speeds are not a real concern. Many experienced cyclists are routinely passed by motorists at speeds of excess of 65 mph on other highways having narrow or no shoulders.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-02]*)

“3. Work with CALTRANS to provide temporary access to the shoulders of I-280; this has the potential of removing large, fast groups of cyclists using the Ralston trail and reducing the impact to other users of that trail.” (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-12]*)

Response

As described on Draft EIR pages 5.10-12 to 5.10-17 (Vol. 1, Chapter 5, Section 5.10), the localized impacts to bicycling as a degradation of a recreational resource is considered a significant impact. However, the proposed project's impacts on recreational bicycling would be reduced to a less-than-significant level through implementation of Mitigation Measure M-RE-1 (Notify Bicycle Organizations of Detours). Mitigation Measure M-RE-1 would augment Mitigation Measure M-TR-1 by requiring that the SFPUC work with San Mateo County to notify local bicycle organizations of the construction activities and feasible alternative bicycle detour routes. The detour routes are described on Draft EIR pages 5.6-12 and 5.6-13 and depicted in Figure 5.6-2 on page 5.6-13 (Chapter 5, Section 5.6). (Also see **Responses R6, R7, and R9** for additional discussion of the proposed bicycle detours.)

However, in response to this comment, Caltrans was contacted to determine the feasibility of using the section of I-280 between the Hayne Road/Black Mountain Road interchange and Bunker Hill Road as a temporary bicycle detour route during construction of the LCSDI project. Caltrans reviewed the LCSDI project schedule and the proposed bicycle detours presented in the Draft EIR, and conducted a safety review of the alternate I-280 bicycle detour suggested by the commenter. Based on this review, Caltrans determined that the construction schedule for the LCSDI project (and thus, the timing of the bicycle detours) conflicts with a Caltrans roadway maintenance project on the I-280 bridge above San Mateo Creek that is scheduled for April 2011 through October 2011 (Gerard, 2010).¹⁰ Therefore, according to Caltrans, I-280 would not be available for use as a bicycle detour for at least 7 months of the 14-month LCSDI construction period. With respect to bicycle safety, Caltrans determined that the existing stormwater drainage inlets, overdrains, and expansion joints along the I-280 bridge are unsafe for bicycle travel, and an approximately 3,000-foot-long section of bridge railing does not meet the minimum height requirements for bicycle traffic (Gerard, 2010). Due to the construction schedule conflict with the Caltrans maintenance project, the existing safety hazards for bicyclists along this segment of I-280 (and the extensive improvements that would be required to make this a viable detour route), and because feasible bicycle detour routes were identified the Draft EIR which more appropriately address this impact (see Draft EIR page 5.6-12 [Vol. 1, Chapter 5, Section 5.6]), no change to the EIR is made in response to this comment.

¹⁰ Construction of the LCSDI project is expected to take up to 14 months and is scheduled to begin in early 2011, with project completion by early spring 2012 (see Draft EIR page 3-19 [Vol. 1, Chapter 3, Section 3.6.1]).

When Caltrans provided information on the I-280 detour, Caltrans provided two additional comments on the proposed bicycle detours as follows:

1. "The vertical alignment of Bunker Hill Dr, with a grade in excess of 10%, does not make this roadway segment a viable detour for bicyclists, at least in the eastbound direction. Few bicyclists could ascend this grade. The design and safety issues identified in the DEIR comment letter by Silicon Valley Bicycle Coalition regarding the detour as proposed (Ralston bike path, Polhemus Rd, Crystal Springs Rd) should be addressed."

This concern is addressed in Response R6.

2. "Of course, the project sponsor(s) could consider providing a shuttle service for bicyclists and pedestrians."

Since feasible bicycle detour routes were identified the Draft EIR which more appropriately address this impact (see Draft EIR page 5.6-12 [Vol. 1, Chapter 5, Section 5.6]), a shuttle service was determined unnecessary and no change to the EIR is made in response to this comment.

Comment R9, Ralston Trail Conditions and Requested Improvements

The following comments are included under Comment R9:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-04]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-05]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-06]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-07]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-10]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-16]*
- "• The pavement of the Ralston trail is in poor condition with weeds growing through cracks in the pavement. There are some drainage problems which could affect the utility of this route during and after heavy rainfall." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-04]*)
- "• The DEIR should address the problem of regular sweeping of the trail to prevent build-up of debris." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-05]*)
- "• The section of the Ralston trail near Cañada is about 8-feet wide with steep grades and sharp corners. The sight-lines are limited. This section of the trail probably does not meet the standards for a Class I bike facility outlined in the CALTRANS Highway Design Manual, Chapter 1000 and consequently should be consider potentially hazardous." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-06]*)
- "• It should be noted that the Ralston trail is a multi-use facility and that diverting large groups of cyclists onto this facility will lead to conflicts and may pose a safety hazard to all users; especially in areas where the trail is narrow and with limited line of sight.

- The button for the pedestrian activated signal at the Ralston's trail intersection with Ralston/Polhemus and the SR92 exit has two problems. First, it does not offer a protected left turn onto Ralston/Polhemus. Second, the existing button for the signal is placed in an awkward spot for cyclists since it is adjacent to a depression for a drainage grate. A possible solution to both of these problems is to install either pavement loops or another button north of the existing button, such that left turns can be made without conflict with left-turning motorists from the SR92 exit." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-07]*)
- "1. Improvements be made to the Ralston trail to better accommodate cyclists including bringing the trail up to CALTRANS standards for a Class I facility, widening and improving sight-lines, and providing a protected turning phase at the light with Ralston." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-10]*)
- "2. Northbound on Polhemus at De Anza, the bike lane is designated to the right of the right-turn only lane which is a hazard and is potential in conflict with the CALTRANS Highway Design Manual, Chapter 1000. (see picture below)" (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-16]*)

Response

This comment regarding bikeway conditions along the Ralston Trail and Polhemus Road is acknowledged. Several recreational trails in the project vicinity, including the Ralston Trail, are maintained by the San Mateo County Department of Parks. Similarly, the San Mateo County Department of Public Works is responsible for maintaining designated bikeways along local roadways in the project vicinity. The SFPUC does not have jurisdiction or authority over the maintenance of these trails and roadways.

As part of maintenance activities for the Ralston Trail, the San Mateo County Department of Parks clears the trail surface of any debris (i.e., gravel, dirt, litter, etc.) as needed; usually trims encroaching vegetation along the trail with a string trimmer annually in the spring; and repairs cracks and potholes in the pavement as the need arises and funding permits. The last pavement repairs were performed about seven to eight years ago. For the current year's budget, the San Mateo County Department of Parks has budget allocations for clearing debris and string cutting vegetation, but does not have funding for pavement repairs. The Ralston Trail is inspected by the San Mateo County Department of Parks on a monthly basis, although the department responds immediately if notified of any issues (Lockman, 2010).

A staff member of the San Francisco Planning Department with substantial bicycling experience conducted a site reconnaissance of the proposed bicycle detours on May 13, 2010 to assess the bikeway conditions. It was determined that the proposed bicycle detour on Polhemus Road and Ralston Trail would add about 20 minutes one way to the average cyclist's ride time, and that although certain improvements could be made to improve the recreational experience for cyclists, the entire detour route is feasible in its current condition (Lovejoy, 2010).

To provide clarification on the commenter's concerns regarding safety conditions for bicyclists and pedestrians along the Ralston Trail, the following text revisions are made to the first bullet of Mitigation Measure M-TR-1 (Traffic Control Plan) on Draft EIR page 5.6-24 (Vol. 1, Chapter 5, Section 5.6) and page 6-10 (Vol. 1, Chapter 6, Section 6.6):

- The SFPUC shall coordinate with San Mateo County on traffic and bicycle detours developed as part of the Crystal Springs Dam Bridge Replacement project to ensure that throughout construction of the LCSDI project, the detours remain accessible and safe for motorists and bicyclists and that adequate signage and notification of the detours are maintained. As part of the SFPUC's coordination with San Mateo County on the Traffic Control Plan, the SFPUC will work with San Mateo County to periodically monitor and maintain accessibility and safety conditions for bicycle and pedestrian traffic along bicycle detours.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Construction-Related Safety Hazards

Comment R10, Increased Safety Hazards for Bicyclists and Recreationists

The following comments are included under Comment R10:

- *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-09]*
 - *Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-13]*
- "• The DEIR notes that weekend parking is primarily along the shoulders of Skyline and Crystal Springs. The DEIR needs to consider this area more than just a parking lot as it is a staging area for the popular Sawyer Camp trail. Users will be paying attention to numerous items such as taking their bikes from the car, adjusting clothing, and controlling their kids. They may not be paying attention to the occasional large trucks associated with the construction; it is important that the truck drivers be made well aware of this hazard.
- At the bottom of Page 5.6-19, the DEIR makes a confusing or misleading statement; "*However, on weekends (when bicycle travel is greater), the potential for conflicts from increased truck traffic on Crystal Spring Road would be greater.... Implementation..., which would require post ... detour signs ... of nearby recreational facilities ... would reduce this impact....*". Cyclists and trucks will still need to share the road at many places since the proposed detour does not separate the two groups of users. We are concerned that the signs will do nothing to physically reduce the conflict." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-09]*)
- "4. Provide continual truck-driver education about sharing the road with cyclists and awareness of traversing areas where people are not particularly attentive to traffic around them." (*Corrine Winter, Silicon Valley Bicycle Coalition [O_SVBC-13]*)

Response

The commenter is correct in noting that Mitigation Measure M-TR-1 (Traffic Control Plan) would require the SFPUC to post detour signs for bicyclists and pedestrians. In

addition, implementation of Mitigation Measure M-TR-1 would require that the SFPUC coordinate with San Mateo County to ensure that the designated detour routes remain accessible throughout construction activities, that adequate signage and notification of the detours are maintained, that haul trucks be restricted from using certain roadways to avoid conflicts with bicyclists, and that flaggers and/or signage be used to guide vehicles at project access points (see Draft EIR pages 5.6-24 to 5.6-25, Chapter 5, Section 5.6). The combination of multiple requirements in the Traffic Control Plan, including the additional stipulation described below, are required to reduce the potential conflict of bicyclists with construction trucks and other vehicles to a less-than-significant level.

In response to the comment requesting a truck driver education program, the following stipulation is added as the last bullet to Mitigation Measure M-TR-1 (Traffic Control Plan) on Draft EIR pages 5.6-24 and 5.6-25 (Vol. 1, Chapter 5, Section 5.6) and pages 6-9 to 6-11 (Chapter 6, Section 6.6):

- A truck driver education program shall be developed and implemented to inform truck drivers of the increased safety hazards to cyclists and recreational users associated with the movement construction vehicles along popular bicycle routes in the project vicinity, and to reinforce driving practices that promote driver awareness and road safety for all users.

This revision does not change the analysis or conclusions presented in the Draft EIR.

References – Recreation

Gerard, Ina, District 4 Bicycle Coordinator, California Department of Transportation (Caltrans), email communication between with Kelly White, Deputy Project Manager, Environmental Science Associates, July 9, 2010.

Lockman, Gary, Superintendent, San Mateo County Parks, personal communication with Anna Roche, Environmental Project Manager, SFPUC, May 26, 2010.

Lovejoy, Erika, Senior Planner, San Francisco Planning Department, LCSD Field Visit Notes for Alternate Bicycle Route, May 25, 2010.

4.15 Utilities and Service Systems

No comments were received on topics related to Chapter 5, Section 5.11, Utilities and Service Systems, of the Draft EIR.

4.16 Public Services

No comments were received on topics related to Chapter 5, Section 5.12, Public Services, of the Draft EIR.

4.17 Biological Resources

The following comments and corresponding responses cover topics related to Chapter 5, Section 5.13, Biological Resources, of the Draft EIR. Due to the number and complexity of the comments received on Biological Resources, this section is divided into two groups: (1) comments that are responded to in whole or in part in a master response; and (2) individual comments and their individual responses. There are two master responses in this section, one on “no net loss” of habitat functions and services and one on special-status plants and serpentine habitats.

Master responses provide comprehensive and cohesive responses to similar concerns raised by multiple comments; they also avoid unnecessary repetition in individual responses, and address complex and interrelated issues in a broader context than might be elicited by individual comments. When issues are addressed in this broader context, the interrelationships between some of the individual issues raised can be clarified. The responses to individual comments may refer to subsections of the master responses for additional information, as appropriate.

Table C&R 4.17-1 presents an index of the master response subsections, individual responses, and specific comments addressed in this section.

4.17.1 Master Response on No Net Loss of Habitat Functions and Services

This master response provides an overview of the SFPUC’s approach to biological resource mitigation and specifically to the concept of “no net loss of habitat functions and services.” This concept forms the fundamental basis for the SFPUC’s overall mitigation program for the LCSDI, and the intent of this master response is to provide the underlying context of the responses that follow in this section.

In order to better understand the details of specific responses to comments, this master response provides the unifying concepts which apply to the individual responses. As noted in Table C&R 4.17-1, all of the comments addressed in this master response are also responded in detail in another response. Some of the responses to the specifics contained in these comments are addressed in the second master response, below, or in the individual responses.

This master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS2-16]*
- *Drew Shell, California Native Plant Society [O_CNPS2-17]*
- *Drew Shell, California Native Plant Society [O_CNPS2-20]*
- *Drew Shell, California Native Plant Society [O_CNPS2-22]*
- *Drew Shell, California Native Plant Society [O_CNPS2-23]*
- *Tiffany Knight, Washington University in St. Louis [I_Knight-02]*

Comment O_CNPS2-16 (mitigation ratios) states that the mitigations proposed in the Draft EIR “would compensate for rare plant species and plant communities only at a roughly 1:1 ratio”, yet

COMMENTS

[illegible]

TABLE C&R 4.17-1 (Continued)
INDEX OF RESPONSES TO COMMENTS ON BIOLOGICAL RESOURCES

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could have impacts beyond the obvious loss of observed individuals. Comment O_CNPS2-20 states that “it is hard to see how a claim (of adequate mitigation) can be justified when the mitigation parameters have been left so terribly undefined.” Comment O_CNPS2-22 states that the “proposed mitigations do not define plans for preservation of the full genetic diversity across all segments of those populations expected to be impacted by the project.”

This EIR uses a habitat “functions and services” approach to mitigation rather than mitigation ratios. The mitigation measures in the EIR also set forth success criteria which provide minimum compensation amounts for each affected biological resource. This topic is discussed in greater detail below.

The terms habitat “functions and services”, and less commonly “functions and values” are used throughout the Draft EIR mitigations for project impacts and set the general standard by which mitigation adequacy should be judged. Habitat *functions* are the ecological processes by which the habitat interacts with the larger ecosystem; for example, providing protection from soil erosion, habitat for rare or endangered species, or overall diversity in the context of surrounding habitats of different types. Habitat *services* or *values* are the complementary processes through which habitats, and the organisms that are found there, have benefits for human beings.

Under CEQA (CEQA Guidelines Sec. 15126.4) there must be a nexus between an impact and its mitigation, and mitigation must be roughly proportional to the project’s impact. As a practical matter, this usually means that compensatory mitigation for impacts on biological resources must credibly provide habitat functions and services equivalent to the habitat functions and services lost.

In some cases, a CEQA analysis may find that full replacement of the lost functions and services may not be feasible on a site of equal size and that the area required for mitigation needs to be larger, i.e. it would be mitigated at a higher ratio. The use of higher ratios addresses the uncertainties associated with creating replacement habitat functions and services and should take into consideration the mitigation methods (i.e., restoration, establishment, enhancement, preservation); the likelihood of success; differences between the functions and services lost at the impact site and the those expected to be produced by the compensatory mitigation project; temporal losses of resource functions and services; the difficulty of restoring or establishing the desired habitat type and functions; and the distance between the impacted resources and the compensation site. However, ratios, particularly those simply negotiated between project proponents and resource agencies, are not a substitute for a long-term commitment to achieving the no net loss standard, or a more complete analysis of what actually might occur after the mitigation is completed (King and Price, 2004).

Comment O_CNPS2-22 proposed that genetic diversity be a standard for both impacts and mitigations. Such a standard is not specifically named in CEQA as a significance criterion or an impact category, and the Draft EIR used the more reliable and accepted functions and services approach. While the concept of preserving genetic diversity clearly has merit, criteria for identifying, quantifying, and achieving genetic diversity have not yet been developed or generally accepted by the scientific community. However, the program developed by the SFPUC does have collateral benefits in this regard, as noted below.

The adequacy of the functions and services approach to develop mitigation measures for rare plants in the Draft EIR is demonstrated by several aspects of the program. First, the rare plant mitigation sites are in the same watershed as that in which the impacts would occur. The proximity of impacted sites and areas where the replacement functions would be developed and the continuity of land management provides a high probability that successful mitigation at the compensation sites is feasible and the management would be in perpetuity. This proximity also helps to preserve the genetic integrity and viability of future populations. Second, mitigation would either be fully completed prior to implementation of the proposed operations (see Master Response on Special-status Plants and Serpentine Habitats, below, under the subsection *Implementation of Mitigation Actions in Advance of Operational Impacts—Franciscan Onion, San Francisco Collinsia, and Western Leatherwood*) or carried out in a stepwise manner, in advance of and in proportion to the impacts as they occur (see Master Response on Special-status Plants and Serpentine Habitats, below, under the subsection *Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts—Fountain Thistle, Marin Western Flax and Crystal Springs Lessingia*). This effectively makes the increase in water level contingent upon assured satisfaction of mitigation requirements. Also, the Master Response below, in the subsection *Success Criteria*, describes the process for determining whether functions and services have indeed been replaced and the subsection entitled *Rationale for Overlapping Mitigation* makes clear that for all special-status plant species, if the primary mitigation site is not capable of providing compensation habitat, then other areas on the watershed would be identified and utilized for this purpose. In addition, the success criteria include minimum compensation amounts for each of the affected plant species.

Lastly, acknowledging the uncertainty of restoration outcomes, as noted in many comments (O_CNPS2-16, O_CNPS2-20, O_CNPS2-22, O_CNPS2-23, I_Knight-02), the SFPUC would adaptively manage all mitigation sites to diagnose problems and apply lessons learned to ensure future success. The adaptive management program is outlined as one component of the Mitigation and Monitoring Plans to be developed for special-status plants in accordance with the detailed requirements and specific success criteria set forth therein.

4.17.2 Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation

This master response is a consolidation of multiple substantive comments on how the Draft EIR handled and disclosed information on special-status plant distribution and extent, analyzed and disclosed information on impacts to these resources, and identified mitigation areas. Later subsections in the master response discuss development and content of the Mitigation and Monitoring Plans, (i.e., the implementation specifics for each species); and the ecological rationale for mitigation actions, including phased or coordinated (stepwise) relationship between impacts and mitigations, success criteria, and contingency planning.

This master response is divided into the following subsections:

- Review of Available Information and Data Adequacy, Fountain Thistle
- Review of Available Information and Data Adequacy, Other Special-status Plants

- Summary of Impacts on Special-status Plants
- Impacts on Fountain Thistle and Marin Western Flax
- Impacts on Other Special-status Plants
- Identification of a Mitigation Area for Special-status Plants and Serpentine Habitats
- Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats
- Primary Habitat Restoration and Enhancement Actions
- Rationale for Mitigation Actions
- Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts – Fountain Thistle, Marine Western Flax, and Crystal Springs Lessingia
- Implementation of Mitigation Actions in Advance of Operational Impacts – Franciscan Onion, San Francisco Collinsia, and Western Leatherwood
- Establishing a Compensation Baseline, Special-status Plants
- Success Criteria
- Contingency Planning
- Rationale for Overlapping Mitigation
- Role of Transplanting, Seed Collection, and Salvage
- Monitoring of Special-status Plants and Serpentine Habitats

Review of Available Information and Data Adequacy, Fountain Thistle

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS2-02]*
- *Drew Shell, California Native Plant Society [O_CNPS2-05]*
- *Drew Shell, California Native Plant Society [O_CNPS2-06]*
- *Drew Shell, California Native Plant Society [O_CNPS2-10]*

These comments state that the Draft EIR does not adequately describe the number, size, and condition (i.e., threats to) of local populations of potentially-affected special-status plant species, thereby providing a context in which to analyze the scope and seriousness of possible impacts. The comments point out the importance of this analysis because several of the plant species are very restricted geographically, with major population centers on the Peninsula watershed. This subsection provides more detailed information specifically about fountain thistle, due to the additional information that has been reviewed and evaluated as part of the permitting process for this project. The next subsection provides more detailed information about other special-status plants.

The Draft EIR presents a brief description of the status of fountain thistle, a federally and state-listed endangered species, in the project area (Vol. 1, Chapter 5, Section 5.13, page 5.13-20); however, as part of the ongoing permitting process for the project, additional studies have been reviewed and evaluated that augment the information in the Draft EIR. Additional background and context for fountain thistle is summarized below.

Historically, fountain thistle occurred in San Mateo County and potentially in Santa Clara County as well, although the Santa Clara County record remains unconfirmed (Federal Register, 1995). The species' range has never extended far, appearing to have been restricted to the area now identified as Crystal Springs Reservoir and to areas south of the reservoir within about seven miles.

When the U.S. Fish and Wildlife Service (USFWS) Recovery Plan was formulated in 1998, three fountain thistle populations were identified, totaling approximately 5,200 plants (USFWS, 1998). One population of approximately 5,000 individuals occurred east of Crystal Springs Reservoir, on both sides of Interstate 280. A second population of 100 to 200 plants occurred six miles south in the "Triangle", an area bounded by Interstate 280, Cañada Road, and Edgewood Road that is owned and managed by SFPUC. The third location occurred in nearby Edgewood County Park, where a single plant was found in 1987.

Additional occurrences of the species have been identified within the Crystal Springs Reservoir and surrounding areas since publication of the 1998 Recovery Plan. In brief, there are currently three extant populations of fountain thistle: Crystal Springs Reservoir (comprised of eight extant subpopulations); Stulsaft Park in Redwood City; and Woodside Glens in Woodside. Table C&R 4.17-2 presents a summary of historical and recent plant counts from the 17 current and historical populations and subpopulations, as well as the estimated acreage from seven of the extant populations and subpopulations. The eight Crystal Springs Reservoir subpopulations on SFPUC Peninsula watershed lands constitute 97 percent of the total fountain thistle population. Three-quarters of all known fountain thistle plants occur at one subpopulation (referred to as the Boat Ramp). Two previously reported fountain thistle populations (the Triangle [L12] and Edgewood Park [L16]) and four previously reported subpopulations (Basin 4 [L5]; Caltrans Right-of-Way [L10]; near Substation [L15]; and a site near the Upper Crystal Springs Reservoir shoreline [L11]) appear to be extirpated; in addition, one subpopulation appears to have been erroneously mapped or is extirpated [L14], and two new populations (Stulsaft Park [L17] and Woodside Glens [L18]) and three new Crystal Springs subpopulations [L1, L2, and L7] have been discovered since the Recovery Plan was prepared. Extant fountain thistle counts, totaling 25,000 to 26,000 plants, far exceed the 5,000 plants estimated in the Recovery Plan.

Information on the extent and population size of fountain thistle is based on very recent yet accurate documentation by the SFPUC Natural Resources Division, which employed up-to-date GPS equipment and a consistent methodology for counting individual plants across all Peninsula watershed subpopulations. These counts included plants of all life stages, including year-old or possibly seedling plants, to rosette-stage individuals from one to possibly four years of age, to flowering individuals. Therefore, the following statement is added to the text of the Draft EIR (Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-20, second full paragraph, following sentence 4, as follows:

Historically, fountain thistle occurred in San Mateo and Santa Clara Counties, but it is now limited to San Mateo County (Federal Register, 1995). Based on recent survey data (SFPUC, 2010), the total known population is between 25,000 to 26,000 individuals occupying approximately 2.5 acres. Fountain thistle was found at two locations within the project area in 2006. When assessed in late 2009, 0.56 acres of Crystal Springs fountain thistle was present at elevations up to 291.8 feet, and of this, 0.30 acre was within the future operational area (up to 287.8 feet). With regard to the condition of fountain thistle populations, the available data are insufficient to draw detailed conclusions as to trends. Several populations of fountain thistle known at the time of the Recovery Plan have become extirpated, while several have been discovered that were not known at the time of the Recovery Plan preparation. Other than

TABLE C&R 4.17-2
INDIVIDUAL PLANT COUNTS OF FOUNTAIN THISTLE FROM SURVEYS 1998 THROUGH PRESENT AND ESTIMATED ACREAGE OF EXTANT POPULATIONS AND SUBPOPULATIONS

Population	L#	Recovery Plan 1998 ^a	GGNRA 1999	GGNRA 2000	GGNRA 2001	ENTRIX 2006	SFPUC 2007/ 2008	SFPUC/ Other 2009	SFPUC/ Other 2010	Most Recent Population Count	Population Status	Estimated Acreage, if Extant
Crystal Springs Reservoir	L1	—	—	—	—	~1,000+	~2,000+	19,352		19,352	Extant	Min: 1.16 Max: 1.16
	L2	338 in 1989	87	82	183	—	1,076	—		1,076	Extant	Min: 0.06 Max: 0.12
	L3	50 in 1988	1,258	1,334	708	—	1,088	—		1,088	Extant	Min: 0.03 Max: 0.06
	L4	450 in 1978	2,264	1,800	1,809	—	1,913	—		1,913	Extant	Min: 0.09 Max: 0.09
	L5	—	—	—	—	—	—	0	0	0	Extirpated	
	L6	56 in 1989 23 in 1992	—	—	—	—	0	0	15	15	Extant	Not available ^b
	L7	—	—	—	—	—	711	—		711	Extant	Min: 0.01 Max: 0.01
Triangle Edgewood County Park Stulsaft Park Woodside Glens	L8	—	812	430	575	—	889	—		889	Extant	Min: 0.17 Max: 0.21
	L9	1,000 in 1988	942	473	539	—	—	100		100	Extant	Min: 0.83 Max: 1.10
	L10	10 in 1988 5 in 1989	—	—	—	—	0	—		0	Extirpated	
	L11	—	—	—	—	3	0	0		0	Extirpated	
	L14	<100 in 1985	—	—	—	—	—	0		0	Mismapped or Extirpated	
	L15	<1,500 in 1978 <100 in 1985	—	—	—	—	0	—		0	Extirpated	
	L12	Up to 225	65	7	—	—	0	—		0	Extirpated	
	L16	1	—	—	—	—	—	0		0	Extirpated	
	L17	—	—	—	—	—	50	50		50	Extant	Not available
	L18	—	—	—	—	—	~500	~20,002		500	Extant	Not available
		5,226	5,428	4,126	3,814	~1,000	~7,727	~20,002	15	25,694		

NOTES: "—" means "no data."

The lack of L13 is due to a numbering error; there is no L13.

"—" means the total includes estimates instead of, or in addition to, specific plant counts.

^a Plant counts identified in the table came from Rarefind CNIDDB descriptions and not directly from the Recovery Plan. The Rarefind plant count of 2,292 does not match the Recovery Plan's total estimated population of 5,226.

^b This locality is essentially a point locality and is most likely 0.01 acre or less, but because specific information was not available it was not included in the total acreage of occupied habitat.

SOURCE: SFPUC, 2010

the Boat Ramp population, which appears to have formed in response to the recent development of suitable conditions, it is not known whether the new populations are newly-developed, or whether they simply were undiscovered. The threats that are better known include: (1) jubata grass, which has greatly reduced or eliminated fountain thistle populations in one or more locations; and (2) alteration of hydrology, which is apparently the cause of extirpation of populations at the Triangle and the type locality at L10.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Review of Available Information and Data Adequacy, Other Special-status Plants

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS2-02]*
- *Drew Shell, California Native Plant Society [O_CNPS2-04]*
- *Drew Shell, California Native Plant Society [O_CNPS2-05]*
- *Drew Shell, California Native Plant Society [O_CNPS2-07]*
- *Drew Shell, California Native Plant Society [O_CNPS2-08]*
- *Drew Shell, California Native Plant Society [O_CNPS2-09]*
- *Drew Shell, California Native Plant Society [O_CNPS2-10]*

These comments state that the Draft EIR does not adequately describe the number, size, and condition (i.e., threats) of local populations of potentially-affected special-status plant species, thereby providing a context in which to analyze the scope and seriousness of possible impacts. The comments point out the importance of this analysis because several of the species are very restricted geographically, with major population centers on the Peninsula watershed. This subsection provides more detailed information about each of the potentially-impacted special-status plant species other than fountain thistle. The Draft EIR presents a brief description of the other special-status plant species in the project area (Vol. 1, Chapter 5, Section 5.13, page 5.13-15 to 5.13-22); however, as part of the ongoing permitting process for the project, additional studies have been reviewed and evaluated that augment the information in the Draft EIR.

The text below supplements the text on individual special-status plant species in Draft EIR, Volume 1, Chapter 5, Section 5.13, pages 5.13-15 through 5.13-22.

Franciscan onion. This species is present in Sonoma, San Mateo, and Santa Clara Counties (CNPS, 2001). There is a potential for this herb to occur within the project area based on available habitat, including serpentine outcrops and dry hillsides with clay soils. Out of 14 occurrences recorded by CNDDDB, nine are in San Mateo and Santa Clara Counties; of these, at least one and possibly as many as three localities are on SFPUC Peninsula watershed land. Seven localities have been reported more recently on SFPUC watershed land totaling 0.96 acre; these are in San Mateo canyon and along the eastern edge of Crystal Springs Reservoir. This species was observed at five additional locations during project surveys in 2006, primarily along the margin of Lower Crystal Springs Reservoir, occupying a total area of 0.02 acre of grassland and woodland in the project area below 287.8 feet and 0.01 acre between 287.8 feet and 291.8 feet. More than 216 individuals were observed at these locations.

No information is available on population trend of this species. CNDDDB (CDEG, 2009c) notes that threats include trampling (in a park setting) and competition from non-natives.

San Francisco collinsia. This collinsia species occurs from San Francisco County south to Monterey County (CNPS, 2001). CNDDDB reports 12 occurrences of San Francisco collinsia in San Mateo and Santa Clara Counties; of these, as many as four may be on SFPUC Peninsula watershed land. San Francisco collinsia was observed at three additional locations during surveys of the project area in 2006, occupying a total area of 0.01 acre below 287.8 feet elevation. Approximately 620 plants were observed at these locations. Although no San Francisco collinsia were observed in the elevation range 287.8 feet to 291.8 feet, a larger population was present outside the project area on the very steep, shady oak woodland slope above 291.8 feet. As this is more typical habitat for the species, it appeared that seed from this area was the source of the lower population. No information is available on population trend of this species. CNDDDB (CDEG, 2009c) notes that threats include road and trail maintenance and erosion.

Western leatherwood. This shrub occurs from south of Sonoma County to San Mateo and Santa Clara Counties (CNPS, 2001). CNDDDB reports 16 records from San Mateo and Santa Clara Counties, of which five are located on SFPUC Peninsula watershed land. An additional 14 records totaling 0.44 acre have been recorded recently in the SFPUC watershed GIS; in addition, several hundred localities consisting of isolated individuals or small numbers of individuals are known on watershed land but have not been incorporated into the GIS database (Foree, 2010). Western leatherwood was observed at three locations during surveys of the project area in 2006, occupying a total area of 0.09 acre below 287.8 feet. Twenty-eight individuals were observed at these locations. No plants were observed in the elevation range between 287.8 and 291.8 feet. Population trend of this species is difficult to assess, as it is underreported. CNDDDB (CDEG, 2009c) notes that threats include habitat loss due to development, brush thinning for fire management, and competition from non-natives.

Fragrant fritillary. Fragrant fritillary is found from Sonoma and Solano Counties south to Monterey and San Benito Counties (CNPS, 2001). Fragrant fritillary has an elevation range of 10 to 1,345 feet, and occurrences of this species have been recorded directly adjacent to Upper Crystal Springs Reservoir (GGNPA, 2001). CNDDDB has a total of 59 occurrence records for fragrant fritillary, of which 16 are in San Mateo and Santa Clara Counties. At least three of these are on SFPUC Peninsula watershed land. In 2001, the Golden Gate National Recreation Area (GGNRA) mapped fragrant fritillary in an area encompassing 60.12 acres, mostly on Pulgas Ridge. Grassland communities within the project area provide suitable habitat for this species, but, Although it was not observed during surveys in 2006, an investigation by EIP in 1999 reported two occurrences of fragrant fritillary totaling about 0.30 acre in and near the project area, in serpentine bunchgrass habitat on the east side of Upper Crystal Springs Reservoir. About half of the mapped area, or an estimated 0.15 acres, was situated within the project area, all between the elevations of 287.8 and 291.8 feet. No information is available on population trend of this species. CNDDDB (CDEG, 2009c) notes that threats include competition from non-native species, grazing, trail use, and habitat loss.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

For more discussion on this species, please see Comment B9, Fragrant Fritillary, below, and associated responses to O_CNPS2-4 and O-CNPS2-19 concerning context and impacts on fragrant fritillary.

The text below supplements the text on individual special-status plant species in Draft EIR, Volume 1, Chapter 5, Section 5.13, pages 5.13-21 through 5.13-22.

Marin western flax. Marin western flax occurs from Marin County to San Mateo County (Federal Register, 1995), ~~and there are several known occurrences of this species within the project area (GGNPA, 2001).~~ CNPS has a total of 28 occurrence records for Marin western flax, of which 11 are in San Mateo and Santa Clara Counties. Five of these are located on SFPUC Peninsula watershed lands. GGNRA in 2001 mapped Marin western flax in an area of 45.32 acres on Peninsula watershed land, but more recent and precise measurements of occupied habitat indicate that Marin western flax occupies only 2.58 acres there. Marin western flax was observed in serpentine grasslands at four additional locations during project surveys in 2006, occupying a total area of 0.02 acre. Almost all of this was in the elevation range 287.8 to 291.8 feet; only an estimated 0.002 acre was located below 287.8 feet. A general decline in the overall population has resulted in its listing by the CDFG and USFWS. Threats include (CDFG, 2009c) competition from non-natives, development, trampling, highway maintenance, and trail use.

Crystal Springs lessingia. This species is found in Sonoma and San Mateo Counties (CNPS, 2001). CNDDDB has a total of nine occurrence records for Crystal Springs lessingia, of which seven are in San Mateo County. Four occur on SFPUC Peninsula watershed land. Based on SFPUC GIS database information and GGNRA surveys in 2001, Crystal Springs lessingia occupies 72.59 acres on the east side of Upper Crystal Springs Reservoir. The most recent CNDDDB records indicate that the primary populations on SFPUC Peninsula watershed lands have been estimated in the range of 10,000 to 100,000 individuals, while the Sonoma County populations are small, consisting of only a few hundred individuals (CNDDDB, 2010). Approximately 5,800 Crystal Springs lessingia plants were observed at nine locations during surveys of the project area in 2005, occupying a total area of 5.7 acres. Crystal Springs lessingia readily occupies very open serpentine substrates, and has been observed to occupy habitat below the current maximum reservoir operating elevation of 283.8 feet when the reservoir does not fill completely. Several of these colonies continued upslope, occupying extensive areas outside of the project area. Crystal Springs lessingia also occurs in the grasslands and shoreline of Staging Area 9 near the Boat Ramp and along the access road from Skyline Boulevard. Of the 5.7 acres mapped within the project area, 2.59 acres were mapped at elevations below 287.8 feet, while 3.08 acres were between 287.8 and 291.8 feet. The population trend of this species is unknown. CNDDDB (CDFG, 2009c) notes that threats include competition from non-natives, especially yellow star thistle.

Arcuate bush mallow. This species occurs in San Mateo, Santa Cruz, and Santa Clara Counties (CNPS, 2001). CNDDDB has a total of 21 occurrence records for arcuate bush mallow, of which 19 are located in San Mateo and Santa Clara Counties. Two of these are known from the SFPUC Peninsula watershed. Arcuate bush mallow was observed at three additional locations during surveys of the project area in 2006, occupying an area of 85 square feet. Eight

bush mallow plants were observed at these locations. All arcuate bush mallow observed were located in the elevation range 287.8 to 291.8 feet. The population trend of this species is unknown, but it appears to be declining. CNDDDB (CDFG, 2009c) notes that threats include fire suppression, road and trail maintenance, erosion, and competition from non-natives.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Summary of Impacts on Special-status Plants

This section of the master response responds to all or part of the following comments:

- Drew Shell, California Native Plant Society [O_CNPS1-02]
- Drew Shell, California Native Plant Society [O_CNPS2-04]
- Drew Shell, California Native Plant Society [O_CNPS2-10]
- Drew Shell, California Native Plant Society [O_CNPS2-17]
- Drew Shell, California Native Plant Society [O_CNPS2-18]
- Drew Shell, California Native Plant Society [O_CNPS2-19]

These comments state that the Draft EIR does not adequately analyze “the scope and seriousness of possible impacts” on special-status plants, in particular because several of the species are very restricted geographically. This response provides more detailed information about the potential impacts on each special-status plant species from two sources, the rise in maximum normal operating elevation and the potential for infrequent rises above this elevation following unexpectedly large storm events.

The analysis in the Draft EIR (Chapter 5, page 5.13-85 through 5.13-87) concludes that significant impacts on special-status plants would likely occur below the proposed maximum normal operating elevation of 287.8 feet for all six of the special-status species occurring there. It concludes that impacts above 287.8 feet (where impacts would occur only from exceedences, i.e., infrequent periodic increases in water levels from 287.8 to 291.8 feet) would be less than significant for all special-status plants, and therefore no mitigation would be required for potential impacts from exceedences. This analysis augments the basis for the conclusion that impacts of exceedences on special-status plants would be less than significant. The basis for this conclusion differs among the special-status species because of their different ecological requirements and likely response to infrequent and brief inundation resulting from exceedences.

The Draft EIR Chapter 5 pages 5.13-76 through -83 describes the predicted effects on vegetation from the proposed increase in maximum normal reservoir operating elevation versus effects due to exceedences. The ecological and operational basis for this analysis is presented in Draft EIR Volume 3, *Appendix J, Supporting Documentation for Vegetation/Habitat Impacts*. For the most part, woody upland habitats and their associated species now growing at or below 287.8 feet elevation are predicted to be converted to other vegetation types because of the frequent and prolonged inundation due to the proposed rise in maximum normal reservoir elevation. Herbaceous upland vegetation types are predicted to be lost at or below 286.8 feet elevation because the predicted frequency of inundation at this elevation is equal to the actual frequency of inundation experienced where herbaceous vegetation currently exists. Unless specific data exist for

constituent species in woody or herbaceous upland vegetation, however, specific upland species are assumed to be impacted at elevations below 287.8 feet.

With regard to exceedences, the analysis on Draft EIR Volume 3, Appendix M, pages M-9 and M-10 provides a specific analysis relevant to the sensitivity of oaks to inundation. It superimposes the long-term precipitation and rainfall intensity information available from the National Weather Service and the SFPUC's historical records of the flood storage reservation maintained in Crystal Springs Reservoir. It analyzed the frequency with which a storm would be likely to occur after March 1 (when the flood storage reservation is ended) that would result in an exceedence, and the length of time such an exceedence would occur at various elevations. It concluded that, conservatively, the elevation 290 feet could experience inundation for about three days once every 35 years. This analysis was needed for an assessment of impacts on oaks, which the literature indicated would likely experience mortality with this inundation frequency.

Other species (for which data may be less available) would experience a threshold of impact at other elevations where exceedences would be more or less frequent and of greater or lesser duration. The impacts on each individual special-status plant species is described in the following subsections.

For purposes of clarity, the following changes are made to Table 5.13-6, (Draft EIR Volume 1, Chapter 5.13, page 5.13-86):

**TABLE 5.13-6
SUMMARY OF PREDICTED IMPACTS ON SPECIAL-STATUS PLANTS**

<u>Acreage and Significance of Impacts</u>	<u>Special-status species (acres)</u>							
	<u>Fountain thistle</u>	<u>Marin western flax</u>	<u>Crystal Springs lessingia</u>	<u>Western leatherwood</u>	<u>Franciscan onion</u>	<u>San Francisco collinsia</u>	<u>Arcuate bush mallow</u>	<u>Fragrant fritillary</u>
<u>Total acreage in project area (below 291.8 ft)</u>	0.56	0.02	5.67	0.09	0.03 0.12	0.01	0.02	<u>0.15</u>
<u>Acreage predicted to be impacted by normal reservoir operations (below 287.8 ft) Predicted loss</u>	0.30	0.002 ^a	2.59	0.09	0.02	0.01	0	<u>0</u>
<u>Significance of impacts, normal reservoir operations^b</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>NA</u>	<u>NA</u>
<u>Acreage potentially impacted by exceedences (between 287.8 ft and 291 ft) No change (no predicted impact)</u>	0.26	0.02	3.08	0.00	0.01 0.10	0.00	0.02	<u>0.15</u>
<u>Significance of impacts, exceedences^b</u>	<u>LS</u>	<u>LS</u>	<u>LS</u>	<u>NA</u>	<u>LS</u>	<u>NA</u>	<u>LS</u>	<u>LS</u>

^a Shown to three significant figures to illustrate extent of predicted impact. All other values are assigned two significant figures.

^b SM = significant, with mitigation can be reduced to less than significant; LS = less than significant; NA = not applicable, no impact

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Impacts on Fountain Thistle and Marin Western Flax

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS1-02]*
- *Drew Shell, California Native Plant Society [O_CNPS2-06]*
- *Drew Shell, California Native Plant Society [O_CNPS2-10]*
- *Drew Shell, California Native Plant Society [O_CNPS2-17]*
- *Tiffany Knight, Washington University in St. Louis [I_Knight-02]*

Comment O_CNPS2-06 notes that the fountain thistle population within the project area that would be impacted is the largest and healthiest known to exist, and the potential impact from the project “strikes at the very core of the long-term viability of this exceedingly rare species.” Similarly, Comment O_CNPS2-09 notes that the Marin western flax populations within the project area are the largest in San Mateo County. Comment O_CNPS2-17 notes that the impacts are analyzed to be below the 287.8 foot elevation, not the 291.8 foot elevation. This subsection discusses the basis for the conclusion that significant impacts to listed species are not anticipated at elevations above 287.8 feet.

In response to comments requesting more discussion on the context for the analysis of impacts on fountain thistle and Marin western flax (and specifically to Comment O_CNPS2-17), the last paragraph of Draft EIR Volume 1, Chapter 5.13, page 5.13-85 is revised as follows:

Impacts on listed plants due to increased maximum normal operating elevation. Populations of two federally and state-listed plant species, fountain thistle and Marin western flax, are present in the project area and extend into the projected, future inundation zone that would occur under proposed operations of Crystal Springs Reservoir. The frequent inundation that would occur below the proposed maximum normal elevation under future operations would affect the currently-occupied 0.30 acre of fountain thistle and 0.002 acre of Marin western flax below 287.8 feet to some extent. As a species that requires continually moist soil, fountain thistle may have some adaptation ability for saturated soil and associated changes in soil chemistry (see page 5.13-81 in the Draft EIR for a description of the changes in soil chemistry with flooding). Fountain thistle has been observed to tolerate inundation for periods of up to 10 days (SFPUC, 2010). With the proposed project, however, only elevations lower than 286.8 feet would be inundated for 10 days per year or more, on average. It is likely, therefore, that some of the area below the proposed maximum operating elevation could be occupied by fountain thistle during most years. No detailed field observations were carried out for Marin western flax in 2009 to corroborate the inundation elevation with the extent of the population of this species; however, incidental observations of this species in the vicinity of the Boat Ramp (Leitner, 2010) indicate that Marin western flax grows down to elevations approximately as low as fountain thistle and arguably has the same tolerance of inundation. Conservatively, then, this EIR concludes that impacts could occur to all of the area below elevation 287.8 feet. This would be a *significant* impact.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

However, it should be clarified that the predicted impacts would *not* affect 50 percent of the acreage of fountain thistle, as stated by Comment I_Knight-02. Approximately half of the acreage within the project area below 291.8 feet elevation would be affected, but this represents about one-fourth of the total acreage of the Boat Ramp population. Similarly, the area predicted to be impacted (below 287.8 feet elevation) supports about 8,000 individuals, or about 40 percent of the total Boat Ramp population. While clearly a significant impact, it is somewhat less than stated by the commenter.

The following text change is inserted as a new paragraph directly after the preceding text change on Draft EIR Volume 1, Chapter 5.13, page 5.13-86:

Marin western flax grows on relatively bare, serpentine soil with limited competition. Wave action on the reservoir margin perpetuates open conditions, and as a result there is a concentration of Marin western flax on the wave-created terraces on the east side of Upper Crystal Springs Reservoir. This annual¹¹ species is documented as growing at elevations of 284 feet and below, with the extent of occupied habitat in any given year limited by the maximum reservoir elevation. As with fountain thistle, Marin western flax may occupy areas below 287.8 feet in some or most years, but the maximum potential impact from the rise in maximum reservoir operating elevation would be currently occupied habitat below 287.8 feet, or 0.002 acres. Loss of this habitat would be a *significant* impact.

Potential impacts on listed plants due to exceedences. The impact resulting from the potential loss of habitat for listed species due to exceedences or infrequent periodic increases in water levels (from 287.8 to 291.8 feet) is ~~considered less than significant~~ likely to be limited and infrequent. This elevation interval supports the majority of listed plant acreage within the project area (0.26 acre of fountain thistle and 0.021 acre of Marin western flax). The inundation during the exceedence periods would be brief and infrequent (see Draft EIR Volume 3, Appendix J, and Appendix M, pages M-9 and M-10), especially at the higher elevations within the exceedence zone. ~~These species both occupy available habitat down to the current year's high water level, and would be expected to do so in the future; thus, potentially affected acreage was based only on the rise in the maximum operating elevation to 287.8 feet and not on the exceedences. In fact, exceedence events lasting 10 days (the observed inundation tolerance of fountain thistle) or more are predicted to occur only a few times per century, and even under worst-case conditions 10 days of inundation would be limited to the lower two feet or so of flood capacity above the maximum operating elevation (287.8 feet to 289.8 feet). Therefore, impacts from exceedences on fountain thistle would occur very rarely and would be limited to the elevation range just above the maximum operating elevation. Conditions would be favorable for fountain thistle in this elevation range in the great majority of years. As a result, the potential impact on fountain thistle due to exceedences is considered less than significant.~~

¹¹ An annual plant is one that completes its life cycle in one year or growing season.

Marin western flax currently occupies suitable habitat (i.e., bare serpentine soil) down to the current year's high water elevation, and would be expected to do so in the future. Sustained high water elevations would generally be limited to the maximum operating elevation of 287.8 feet. Although Marin western flax demonstrably grows down to the sustained high reservoir elevation, this species could potentially experience some temporary loss of habitat during extended exceedence events where maximum water levels are sustained well above 287.8 feet for many days. However, these rare events would be offset by the frequent availability of habitat below 287.8 feet during the numerous periods when the reservoir is not filled and maintained to the maximum allowed elevation. When evaluating the impacts in the Draft EIR in terms of impact frequency, duration, and magnitude, the conclusion relative to the "substantial adverse effect" standard comprised the net impact including both positive and negative effects. As a result, the potential impact of exceedences on Marin western flax is considered less than significant.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Impacts on Other Special-status Plants

This section of the master response responds to all or part of the following comments:

- Drew Shell, California Native Plant Society [O_CNPS1-02]
- Drew Shell, California Native Plant Society [O_CNPS2-10]

Comment O_CNPS1-02 states that the Draft EIR does not "adequately reflect the scope and seriousness of possible impacts on rare native plant species....at the project site." Comment O_CNPS2-10 notes "how important it is to consider the overall context of each rare species...in order to fully evaluate and understand the true importance and severity of the anticipated project impacts." This subsection expands the analysis of impacts to non-listed special-status plants, including the effects of the rise in maximum normal reservoir operating elevation and the effects of temporary exceedences.

The discussion under the heading *Other Special-status Plants* on Draft EIR pages 5.13-86 to 5.13-87 (Vol. 1, Chapter 5, Section 5.13) is revised with the following:

~~Impacts on other nonlisted special status plants are listed below by the number of acres in the inundation zone below the proposed maximum normal operating elevation (287.8 feet). This occupied habitat is predicted to be lost as a result of the increase in maximum reservoir operating elevation.~~

- ~~Crytal Springs lessingia: 2.59 acres~~
- ~~Western leatherwood: 0.09 acre~~
- ~~Franciscan onion: 0.02 acre~~
- ~~San Francisco collinsia: 0.01 acre~~

~~Special status plant losses due to exceedances are not expected to result in substantial mortality or a long lasting reduction in populations because these species are small in stature and are annuals or relatively short lived perennials. In addition to fountain thistle,~~

~~noted above, Crystal Springs lessingia has been observed to grow down to the reservoir's maximum operating elevation, despite the fact that this elevation varies from year to year (Leitner, 2009). Since the periods of inundation would be brief and infrequent, the potential impact on special status plants from exceedances above 287.8 feet is considered negligible. For Crystal Springs lessingia and Franciscan onion, occupied habitat within the project area was greater above 287.8 feet than below; thus, within the project area, only a fraction of the occupied habitat for these species would be affected. No impacts are predicted for arcuate bush mallow, which had mapped populations only above the 287.8 foot contour.~~

~~The impact resulting from the potential loss of all of the special status plants due to exceedances would be less than significant. Loss of the populations of six special status plants fountain thistle, Marin western flax, Franciscan onion, Crystal Springs lessingia, western leatherwood, and San Francisco collinsia due to the increase in maximum operating reservoir elevations would be a significant impact.~~

Impacts on other special-status plants due to increased maximum normal operating elevation. As shown in Table 5.13-6, four special-status plants currently grow below 287.8 feet elevation: Crystal Springs lessingia (2.59 acres), western leatherwood (0.09 acre), Franciscan onion (0.02 acre) and San Francisco collinsia (0.01 acre). Fragrant fritillary and arcuate bush mallow only grow above elevation 287.8 feet within the project area, so no impact from the increase in maximum normal reservoir elevation would occur to these two species.

Crystal Springs lessingia is an annual plant that currently is documented as growing at elevations of 284 feet elevation and below. The extent of its actual occupied habitat varies from year to year based on weather conditions and competition. Suitable habitat therefore is likely to be present from the sustained upper limits of the reservoir (predicted to be 287.8 feet with the project) down to the current year's sustained maximum elevation, which is predicted to vary from year to year but would invariably be at or below 287.8 feet elevation. Thus, the extent of potentially available habitat would vary from year to year, depending on reservoir elevation. However, the estimate of acreage impacted is conservative in that it assumes that all acreage below 287.8 feet would be impacted.

San Francisco collinsia, also an annual plant, typically grows on shady slopes under conifers and hardwoods. Although a small colony was observed below elevation 287.8 feet, it was separated by several feet in elevation from more typical oak woodland habitat farther upslope and may simply be the result of seed "rain" from the colonies farther upslope. The habitat below 287.8 feet is likely less than ideal, but nevertheless is considered potentially impacted.

Franciscan onion and western leatherwood were found at elevations below 287.8 feet. As upland perennials, these species have longer-lived roots and underground parts, such as bulbs. They do not have special requirements for saturated soils, and therefore are unlikely to tolerate the chemical changes in soils when flooded for long periods of time. Therefore, these species are more likely to experience permanent loss of habitat below the proposed

reservoir maximum operating elevation, even if the reservoir is not completely filled to 287.8 feet elevation every year.

Impacts on Crystal Springs lessingia, San Francisco collinsia, Franciscan onion and western leatherwood from the increase in maximum normal reservoir operating elevation are considered *significant*.

Potential impacts on other special-status plants due to exceedences. Exceedences could affect special-status plants growing in the elevation zone from 287.8 to 291.8 feet because this area could experience flooding in some years, although this would occur rarely (see EIR, Section 5.15.3.5, pages 5.15-34 to 5.15-35, and Appendix M). The maximum length of inundation would occur only at the lower elevations within this range, as the reservoir elevation rises in response to unusually heavy and unseasonal storms and lowers as water is moved out of the reservoir and the levels return to normal operating elevations. Thus, the lower elevations of the exceedence zone would be inundated the most frequently and for the longest intervals, and the upper elevations of the exceedence zone would be inundated the most infrequently and for the briefest periods. In most years, the exceedence zone would not be inundated. During normal operations, exceedences would mostly likely occur during March or later, when the flood reservation is no longer in place and a large, late season storm occurs. As a result, impacts on some special-status plants in the elevation zone from 287.8 to 291.8 feet could occur, but they would be infrequent, brief and limited in extent, and are most likely to occur in the late winter, prior to the most active portion of the growing season of most plants. In terms of impact frequency, duration, and magnitude, this impact would not rise to the "substantial adverse effect" standard. Species-specific information and rationale are presented in the paragraphs that follow.

Crystal Springs lessingia currently grows down to the water's edge, which would be lower than the proposed maximum operating elevation in most years. Currently-documented distribution of this species shows it growing at elevations with overall inundation frequencies of 4.5 percent or greater, higher than the projected 1.5 percent inundation frequency in the top foot of the maximum normal operating zone (see Table 5.15-3, page 5.15-33). An extended exceedence could preclude the growth of Crystal Springs lessingia in the lowest portion of the exceedence zone for that year, but in most years all habitat in the future exceedence zone would likely be suitable for this species based on the current presence of the species in areas that experience occasional inundation. As a result, the impact of exceedences on Crystal Springs lessingia would not be severe, frequent or long-lasting, supporting a determination that the impact would be *less than significant*.

Fragrant fritillary only grows above 287.8 feet in the project area, and thus would not be expected to be impacted by the increase in reservoir operating maximum to 287.8 feet. Similarly, arcuate bush mallow also grows only above 287.8 feet within the project area. Mapping indicates that both fragrant fritillary and arcuate bush mallow are located at the higher elevations within the future exceedence zone of elevation 287.8 to 291.8 feet. Thus, within the future exceedence zone, they are concentrated in the elevations that would receive the briefest inundation during those infrequent years when extended exceedences

would occur. Since these are perennial upland species, they could be more sensitive to inundation than the annuals (Marin western flax and Crystal Springs lessingia) because they have more extensive and longer-lived root systems that could experience stress or damage from low soil oxygen and pathogens. Compared with trees, however, their root systems are much smaller and shallower, so the environment around them would drain and return to aerobic conditions more quickly after inundation, and repair of damaged roots could occur more rapidly. As described above, exceedences are expected to be infrequent, brief and limited in extent, especially in the higher elevations within the exceedence zone where these species occur. Thus, although fragrant fritillary and arcuate bush mallow could be affected to a limited degree by exceedences, the effect is expected to be very infrequent, brief in duration, and of very limited magnitude. Therefore, the operational impact of the project is concluded to be *less than significant* based on the magnitude, severity, duration, and frequency of the effect.

Franciscan onion was found to grow both above and below 287.8 feet elevation within the project area. The extent of the population below 287.8 feet was assumed to be impacted due to the rise in maximum reservoir operating elevation; as with fragrant fritillary and arcuate bush mallow, discussed in the preceding paragraph, the incremental impact of exceedences in the elevation range 287.8 feet to 291.8 feet would be *less than significant*.

Western leatherwood and San Francisco collinsia. According to the technical resources report (Appendix I) western leatherwood and San Francisco collinsia were found within the project area, but only at elevations below 287.8 feet; none were mapped in the elevation interval between 287.8 and 291.8 feet. Therefore, *no impacts* (beyond those resulting from the increase in the maximum operating elevation) would occur on western leatherwood and San Francisco collinsia as a result of exceedences.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Identification of a Mitigation Area for Special-status Plants and Serpentine Habitats

This section of the master response responds to all or part of the following comments:

- Drew Shell, California Native Plant Society [O_CNPS2-01]
- Drew Shell, California Native Plant Society [O_CNPS1-03]
- Drew Shell, California Native Plant Society [O_CNPS2-13]
- Drew Shell, California Native Plant Society [O_CNPS2-16]
- Drew Shell, California Native Plant Society [O_CNPS2-20]
- Drew Shell, California Native Plant Society [O_CNPS2-21]

Several comments expressed concern that the mitigation as described in the Draft EIR did not provide enough detail to persuasively demonstrate no net loss of functions and services for impacts on special-status plants and sensitive natural communities. This subsection of the Master Response and several following provide additional detail on the proposed mitigations.

Mitigation Measure M-BI-7a (Serpentine Grasslands Enhancements) on Draft EIR page 5.13-102 (Vol. 1, Chapter 5, Section 5.13) proposes restoration of 10 acres of degraded or potential serpentine bunchgrass habitat on SFPUC Peninsula watershed lands, a portion of which also appears to contain groundwater conditions that could be restored to seep and spring habitat. In response to ongoing discussions with the CDFG and USFWS as part of the regulatory permitting processes for this project, the SFPUC has identified a "Fountain Thistle Management Area" consisting of approximately 35 acres. Of this, 10 acres are proposed in this EIR for mitigating impacts on serpentine bunchgrass habitat, as well as for mitigating impacts on fountain thistle and other special-status plants. **Figure C&R 4.17-1** shows the location of the Fountain Thistle Management Area (FTMA); the 10 acres within the FTMA proposed specifically for mitigation for the LCSDI project have not been designated. The remaining 25 acres would be available for additional mitigation if needed.

Currently, most of the FTMA is serpentine bunchgrass, although it is dominated or degraded by the presence of non-native species. In addition to supporting about half of the Boat Ramp fountain thistle subpopulation, this site currently contains a highly degraded but sizeable subpopulation (L3) of fountain thistle that is threatened by jubata grass (*Cortaderia jubata*); one or possibly two extirpated subpopulations of fountain thistle (L5, an extirpated site; and L14, which is considered an extirpated or possibly a mismapped site and does not appear in Figure C&R 4.17-1); and two extant, healthy subpopulations of fountain thistle (L2 and the remainder of L1 outside of the impact area). It also contains limited populations of Marin western flax and Crystal Springs lessingia.

The FTMA also contains a large stand of Monterey pine (*Pinus radiata*) that overlaps with the Boat Ramp fountain thistle subpopulation and is situated in an area of relatively high groundwater, as evidenced by the presence of tufted hairgrass (*Deschampsia cespitosa*) and fountain thistle. It also contains other areas supporting tufted hairgrass but without fountain thistle. These conditions suggest that the potential for increasing and restoring fountain thistle habitat in this area is high. The proposed mitigation area also contains areas of yellow star thistle (*Centaurea solstitialis*) and non-native grasses typical of upland situations; thus, the uplands have potential for the enhancement of serpentine bunchgrass habitat.

The SFPUC proposes to place a USFWS- and CDFG-approved conservation easement over the FTMA, preserving and managing the existing subpopulations of fountain thistle and establishing an area where active management would be carried out to increase occupied fountain thistle habitat. Actions would also be carried out to restore and enhance habitat for other special-status plants, especially Crystal Springs lessingia and Marin western flax.

The first paragraph of Mitigation Measure M-BI-8a, (Chapter 5, page 5.13-107 and Chapter 6, page 6-33) is revised as follows:

Mitigation Measure M-BI-8a: Listed and Nonlisted Special-status Plants

This mitigation measure shall be carried out in conjunction with Mitigation Measure M-BI-7a. Mitigation for impacts on 0.30 acre of fountain thistle and 0.002 acre of Marin western flax shall be carried out at a specific site with the potential to support these species, as



SOURCE: SFPUC NRD

SFPUC Lower Crystal Springs Dam Improvements

Figure C&R 4.17-1

Boundary of Fountain Thistle Management Area

determined by a qualified biologist. An example would be the ~~Boat Ramp South site Fountain Thistle Management Area~~ described above in Table 5.13-7. At the selected mitigation site, surveys for fountain thistle and Marin western flax will be carried out at an appropriate time of year and any populations found will be avoided. In addition, the serpentine bunchgrass habitat in the Fountain Thistle Management Area would be managed to enhance habitat for Crystal Springs lessingia. Habitat would be replaced to achieve no net loss of habitat functions and services for the species, as determined in consultation with natural resource permitting agencies...

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS1-03]*
- *Drew Shell, California Native Plant Society [O_CNPS2-13]*
- *Drew Shell, California Native Plant Society [O_CNPS2-16]*
- *Drew Shell, California Native Plant Society [O_CNPS2-20]*
- *Drew Shell, California Native Plant Society [O_CNPS2-21]*
- *Drew Shell, California Native Plant Society [O_CNPS2-23]*

Several comments stated that the details of mitigation were left unspecified (Comments O_CNPS2-13, O_CNPS2-20), that compensation ratios were insufficient to fully mitigate for impacts on special-status plants (Comment O_CNPS2-16), and that the conclusion of reduced significance (to less than significant with mitigation) cannot be evaluated or substantiated because “many of the most critical parameters of the intended mitigations are in fact not described, and instead are deferred to a future date” (Comment O_CNPS2-23). This response provides more information about parameters to be addressed in the proposed mitigations.

Mitigation Measure M-BI-8a (Listed and Non-listed Special-status Plants) in the Draft EIR clearly states the overriding performance standard of no net loss of habitat functions and services (page 5.13-107, Vol. 1, Chapter 5, Section 5.13), as determined in consultation with the natural resource permitting agencies. Measure M-BI-8a is intended to operate in conjunction with Mitigation Measure M-BI-7a (Serpentine Grasslands Enhancements). The components of the Mitigation and Monitoring Plan (MMP) under Mitigation Measure M-BI-7a (Serpentine Grasslands Enhancements) are listed on page 5.13-102, following the paragraph describing Mitigation Measure M-BI-7a, which specifies the components requested by the commenter O_CNPS2.

The following text is appended to Mitigation Measure M-BI-7a, (Chapter 5, page 5.13-102 and Chapter 6, page 6-28):

The monitoring plan for serpentine habitats under Mitigation Measures M-BI-7a and for special-status species under Mitigation Measure M-BI-8a shall include the following elements listed below:

Mitigation Goals and Objectives. Fully mitigate to achieve no net loss of habitat functions and services, as determined in consultation with natural resource permitting agencies, for impacts on special-status plant and serpentine habitats. The SFPUC shall mitigate for all potential inundation impacts “up front”, in advance of potential operational impacts and depending upon timing associated with the increase in reservoir storage.

Site Selection. The final mitigation plan(s) shall include a description of the factors considered during the final mitigation site selection process, including consideration of alternative sites and the practicability of accomplishing ecologically self-sustaining habitats at the mitigation site(s).

Site Protection Instrument. The final mitigation plan(s) shall include a description of the legal arrangements and instruments, including site ownership, used to ensure the long-term protection of the mitigation sites.

Baseline Information. The final permits shall include descriptions of the ecological characteristics of the impact sites and their associated proposed mitigation sites. The MMP shall include descriptions of existing plant communities, existing hydrology, soil conditions, a map showing the locations of the mitigation sites, and other site characteristics as needed.

Mitigation Plan. The final MMPs shall specify the mitigation for all impacted resources addressed in the plan(s) needed to achieve no net loss of habitat functions and services, and the rationale used to determine their sufficiency. Factors considered in determining the adequacy of the mitigation shall include:

- The quality of the affected habitat compared with the potential of the mitigation site;
- The similarity of the mitigation site to the affected habitat in terms of site potential (soil, topographic, and hydrologic characteristics) and proposed vegetation composition and structure;
- The timing of mitigation site development in relation to the anticipated loss of existing habitat;
- The connectivity of proposed mitigation habitat with existing, occupied habitat;
- The likelihood of success of the proposed enhancement actions;
- The differences between the habitat functions and services lost and those expected to be provided by the mitigation;
- Temporal losses of resource functions and services;
- The difficulty of restoring or establishing the desired habitat types and functions; and
- The distance between the affected habitat and mitigation sites.

Mitigation Work Plan. The final MMP(s) shall include detailed written requirements and work descriptions for the mitigation projects, including but not limited to: the geographic boundaries of the projects; timing and sequence; methods for establishing the desired plant communities; plans to control invasive plants and herbivory.

Maintenance Plan. The final MMP(s) shall include a description and schedule of maintenance requirements to ensure the continued viability of the habitats once initial installation is completed.

Success Criteria and Contingency Actions. The final MMP(s) shall include ecologically based criteria for use in determining whether the mitigation projects are achieving their objectives. The success criteria shall be based on attributes that are objective and verifiable, such as percent cover, stem count, or health and vigor of plants. The MMPs will describe actions to be taken if success criteria are not met. Please see the subsection entitled Success Criteria and Contingency Planning, below, for more detail.

Monitoring Plan. The final MMP(s) shall include a description of parameters to be monitored to determine whether the mitigation projects are on track to meet success criteria. A schedule for monitoring and reporting on monitoring results must be included. Monitoring and reporting shall continue for five years, or the length of time required by regulatory agencies.

Long-Term Management Plan. The final MMP(s) shall describe how the mitigation sites will be managed after the success criteria have been achieved to ensure the long-term sustainability of the resources, including long-term financing mechanisms and the party responsible for long-term management. Such management will be dictated by periodically examining the performance of the mitigation sites relative to measurable ecological parameters, not as success criteria but as a way of comparing the health of the sites from year to year.

Adaptive Management A decrease in health or vigor of the communities or target species populations at the mitigation sites (such as an insect or weed infestation, disease, or severe herbivory) would trigger corrective actions such as control methods (i.e., hand-pulling weeds, targeted spraying of pathogens), and, if necessary, planting.) The success (or failure) of these actions would form the basis for adaptive management, whereby the maintenance of the resource would improve over time.

The following text is appended to Mitigation Measure M-BI-8a, (Chapter 5, page 5.13-107 and Chapter 6, page 6-33):

Refer to Mitigation Measures M-BI-7a for the monitoring plan for special-status species under Mitigation Measure M-BI-8a.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Primary Habitat Restoration and Enhancement Actions

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS1-03]*
- *Drew Shell, California Native Plant Society [O_CNPS2-13]*
- *Drew Shell, California Native Plant Society [O_CNPS2-23]*

Several comments stated that the details of mitigation were left unspecified (Comment O_CNPS2-13), and that the conclusion of reduced significance (to less than significant with mitigation) cannot be evaluated or substantiated because “many of the most critical parameters of the intended mitigations are in fact not described, and instead are deferred to a future date” (Comment O_CNPS2-23). This response provides more information about the actions proposed in the mitigation measures.

As stated in the Draft EIR (Volume 1, Chapter 5, Section 5.13, page 5.13-102), the SFPUC proposes to restore serpentine bunchgrass and special-status plant habitat by removing trees, brush, and litter; removing invasive weeds; and planting native serpentine bunchgrass species. The area proposed for restoration is contained within the FTMA (see Figure C&R 4.17-1). In addition, the SFPUC proposes an ongoing program of jubata grass control in areas of serpentine seeps and springs, as well as management of exotics such as yellow star thistle and non-native grasses in the serpentine bunchgrass habitat, on a total of 10 acres within the FTMA. Methods would include mechanical removal and herbicide use, with a priority given to mechanical removal whenever feasible.

Rationale for Mitigation Actions

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS1-03]*
- *Drew Shell, California Native Plant Society [O_CNPS2-13]*
- *Drew Shell, California Native Plant Society [O_CNPS2-14]*
- *Drew Shell, California Native Plant Society [O_CNPS2-15]*
- *Drew Shell, California Native Plant Society [O_CNPS2-16]*
- *Drew Shell, California Native Plant Society [O_CNPS2-20]*
- *Drew Shell, California Native Plant Society [O_CNPS2-21]*
- *Drew Shell, California Native Plant Society [O_CNPS2-22]*
- *Tiffany Knight, Washington University in St. Louis [I_Knight-03]*

Several comments assert that the mitigation actions proposed in the Draft EIR are unproven. Comment O_CNPS2-13 states that “extremely large portions of mitigation planning are left unspecified” and that “the purpose of CEQA is not simply to identify project impacts and agree to mitigations, but also to prove to a skeptical public that any proposed mitigations are in fact actually feasible and will truly achieve the intended goal of mitigating for project impacts.” Comment O_CNPS2-14 notes that “there is no supporting evidence to show that a single, contiguous parcel of land can actually be found that will suit the multiple mitigations goals proposed to be grouped together.” Comment O_CNPS2-15 argues that “there are very significant

challenges and difficulties in establishing new habitat for a given species, and in establishing new, viable, permanently self sustaining plant populations.” This subsection provides the rationale to explain how these concerns have been addressed.

It is true that habitat enhancement and restoration have not been attempted at any substantial scale for these very restricted species, especially fountain thistle and Marin western flax. However, if habitat is successfully created or restored for fountain thistle, there is reason to expect that the species would be capable of colonizing it, especially if it is located near or adjacent to existing subpopulations. The elimination of fountain thistle subpopulations from Pulgas Ridge as a result of Interstate 280/Highway 92 interchange construction is well documented; however, where seeps and springs reestablished themselves on cut slopes created by the highway construction, fountain thistle has colonized these habitats (e.g., subpopulation L9 and possibly L10). Other subpopulations are highly likely to have become established after slopes and drainages were altered during highway construction (such as L3, which is situated on a cut slope above a constructed basin, and L5 and L6, which are located immediately below a drainage pipe). These observations support the contention that fountain thistle will occupy newly-enhanced or restored suitable habitat and that mitigation is feasible.

Moreover, the large “Boat Ramp” subpopulation at the edge of Crystal Springs Reservoir was not known, and in fact may not have existed at the time of USFWS listing. At present, the total known fountain thistle population is some five times larger than when the USFWS Recovery Plan was prepared. If the Boat Ramp subpopulation has formed in the ensuing years, this underscores fountain thistle’s capacity to colonize suitable habitat.

Under some circumstances, seeps and springs have been shown to increase surface flow when vegetation is removed. The removal of tamarisk (*Tamarix* spp.) from desert springs is one example (The Nature Conservancy, 2001). Recent soil moisture measurements at the FTMA site have shown that groundwater is relatively shallow beneath the Monterey pine stand that is contiguous with the existing Boat Ramp fountain thistle subpopulation. Removal of these trees is expected to open up habitat for fountain thistle and reduce evapotranspiration¹² demand, resulting in greater retention of water in the soil.

Although the reasons are not known for the apparently relatively recent appearance of the subpopulation in the project area, the observation that the subpopulation is broadest at the water’s edge suggests that shallow depth to the water table related to the reservoir elevation may be a contributing factor to the presence of suitable habitat. Other known subpopulations generally follow linear features below seeps and springs, such as the colonies in subpopulation L4. If shallow depth to groundwater is a contributing factor in the extent of the Boat Ramp subpopulation, raising the reservoir elevation would raise the water table, which in turn could expand the suitable habitat at higher elevations.

Recolonization of disturbed sites is not as well documented for Marin western flax; however, the species thrives on serpentine outcrops with little soil development, no special requirements for

¹² The return of water from the soil and from plants to the atmosphere by evaporation and transpiration.

seepage or springs, and a minimum of competition. While there is some uncertainty that such habitat can be restored or expanded, reasonable mitigation actions are proposed in areas immediately adjacent to occupied habitat. These actions involve reducing competition and mulch/litter accumulation as well as restoring the thin soil over serpentine outcrop habitat this species is known to inhabit. Therefore, the mitigation for Marin western flax includes sufficient provisions under CEQA to ensure no net loss of habitat functions and services (see subsection *Contingency Planning*, below).

Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts—Fountain Thistle, Marin Western Flax, and Crystal Springs Lessingia

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS1-03]*
- *Drew Shell, California Native Plant Society [O_CNPS2-13]*
- *Drew Shell, California Native Plant Society [O_CNPS2-20]*
- *Tiffany Knight, Washington University in St. Louis [I_Knight-03]*

Comment O_CNPS2-13 expresses particular concern that “extremely large portions of mitigation planning are left unspecified, and deferred to a future date.” Comment O_CNPS2-20 states that “it is claimed that proposed mitigations for rare plants and plant communities will reduce impacts to a less than significant level, yet...it is hard to see how such a claim can be justified when the mitigation parameters have been left so terribly undefined. Furthermore, where attempts to justify such claims are presented, all too often those justifications amount to mere expectation or supposition, and are not based on credible science as required by CEQA.” Comment I_Knight-03 echoes these concerns, stating “the mitigation plan for *Cirsium fontinale* is vague and lacks proof of concept for many of the proposed activities”. This subsection provides more detail on proposed actions, and commits SFPUC to demonstrating satisfaction of mitigation success criteria prior to operational impacts. In response to ongoing discussions with the CDFG and USFWS as part of the regulatory permitting processes for this project, the SFPUC has committed to replacing projected losses of fountain thistle, Marin western flax, and Crystal Springs lessingia prior to such losses, both in terms of acreage and population size. However, the project proposes to gradually raise the reservoir elevation and allows mitigation to be carried out in a stepwise fashion consistent with project impacts. Note that mitigation for non-listed species other than Crystal Springs lessingia will be addressed in the next subsection, which calls for full implementation and satisfaction of mitigation requirements prior to project impacts.

The following text augments Mitigation Measure M-BI-8a and describes the proposed stepwise implementation of mitigation for special-status plants; it replaces Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-107, paragraph 5, with the identical text revision to Chapter 6, page 6-33:

~~All habitat improvements shall be carried out prior to the implementation of the increased maximum normal reservoir operating elevation. For the first five years following the reservoir elevation reaching a sustained operating maximum of 29–87.8 feet, the SFPUC shall carry out annual surveys to determine the effectiveness of the habitat improvements.~~

The SFPUC shall implement a stepwise plan to first compensate for a portion of the anticipated impacts prior to the loss of fountain thistle, Marin western flax, and Crystal Springs lessingia, and then to allow the reservoir to rise according to the proportion of impacts compensated. The next portion of anticipated impacts will be compensated, followed by another incremental rise in the reservoir.

The methods for determining the mitigation values shall be based on a baseline and a determination of assessment methods developed with the approval of the resource agencies. This approach will ensure no net loss of functions and services. Once the replacement criterion has been fully met, the SFPUC shall be permitted to raise the reservoir to its proposed maximum normal water level.

Prior to each successive incremental increase in maximum water level, the SFPUC shall conduct a survey of the mitigation area to determine if a sufficient number of individuals are present to allow for additional inundation. Documentation of plant numbers shall be provided to the USFWS and CDFG prior to raising the maximum water level by an additional foot.

The SFPUC shall remove and control exotic plants to improve habitat conditions adjacent to areas containing target native plant species. To facilitate recolonization, salvaged seed may be sown in areas where habitat is deemed to be restored. Transplantation will be considered only as a contingency action in the case that success criteria are not otherwise achieved.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Responding specifically to the commenter's concerns in O_CNPS2-20, the proposed actions have some basis for success and some unknown aspects. There is clear evidence, for example, that fountain thistle can colonize suitable habitat, and that Marin western flax and Crystal Springs lessingia will occupy variable amounts of sufficiently open areas in serpentine bunchgrass habitat. The proposed mitigations directly address competition of non-natives through an ongoing program of exotics removal and enhancement of surface hydrology for fountain thistle. Many ecological restoration or mitigation projects go forward without resolving all of the unknown aspects. Unknown challenges will be identified and solutions developed as part of the adaptive management for the mitigation sites (see Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats).

Implementation of Mitigation Actions in Advance of Operational Impacts—Franciscan Onion, San Francisco Collinsia, and Western Leatherwood

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS1-03]*
- *Drew Shell, California Native Plant Society [O_CNPS2-13]*
- *Drew Shell, California Native Plant Society [O_CNPS2-14]*

Several comments questioned whether the mitigations for special-status plants were “adequate, viable and sufficient” (O_CNPS1-03). Comment O_CNPS2-13 noted that “extremely large

portions of mitigation planning are left unspecified, and deferred to a future date." Comment O_CNPS2-14 observed that "different plant species can have very different needs, and there is no supporting evidence to show that a single, contiguous parcel of land can actually be found that will suite the multiple mitigation goals proposed to be grouped together." Several special-status species do grow together at the primary proposed mitigation site (i.e., Fountain Thistle Management Area), and mitigation there for multiple species is considered appropriate. This master response subsection describes mitigation actions proposed for three special-status species that do not grow together at the FTMA: western leatherwood, San Francisco collinsia and Franciscan onion.

The following text augments Mitigation Measure M-BI-8a and describes the proposed implementation of mitigation for three non-listed special-status plants; it replaces Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-107, paragraph 5, and the identical text revision to Chapter 6, page 6-33, and follows the added text in the preceding subsection:

The acreage and the number of western leatherwood, San Francisco collinsia and Franciscan onion plants affected is relatively small, and each of these species occurs at multiple locations around Crystal Springs Reservoir. The mitigation proposes to enhance several of the reasonably accessible populations around the reservoir through strategies such as reduction in competition and other habitat enhancement.

Franciscan onion grows on clay soils in grasslands and at the edges of serpentine chaparral and hardwood forest, often in association with serpentine substrate. Reported populations are relatively small. The proposed mitigation for this species shall consist of reducing competition in and near two existing populations, ALLI_01 (see Appendix I, page I-221); and ALLI_05 (see Appendix I, page I-234). Reducing competition would consist of hand-removing non-native exotics such as Mediterranean grasses and yellow star thistle, and cutting down tree and brush that overshadow the Franciscan onion. Habitat enhancement would be carried out above the 287.8 foot elevation, extending as far upslope as suitable habitat is present, up to 0.02 acre.

San Francisco collinsia grows on steep, north-facing oak woodlands. It is weakly associated with serpentine substrates. One population (COLL_03, Appendix I page I-226) is situated below a maintained service road on the east side of Crystal Springs Reservoir. Most of the population is above the 291.8 foot elevation (Leitner, 2010). Mitigation for this species shall consist of salvaging the seed from the portion of the population that would be impacted by the rise in the reservoir elevation and sowing them upslope in suitable habitat, monitoring for and removing competing understory plants, enhancing up to 0.01 acre.

Western leatherwood occurs in many localities on the Peninsula watershed, usually in very small colonies consisting of one or a small number of individuals. It is most often found in coastal scrub. It does not appear to grow from seed as readily as it propagates vegetatively from the root crown (Foree, 2010). It sometimes appears to be light-starved due to coast live oaks overtopping the coastal scrub (Leitner, 2010). Mitigation for this species shall consist of removing light competition by removing senescent woody vegetation from the populations

around Tracy Lake and elsewhere, enhancing habitat for up to 0.09 acre or 28 individuals. If this does not provide a sufficient quantity of mitigation, habitat enhancement shall be carried out in connection with the fuel management program on the watershed, where western leatherwood shall be enhanced by removing competing woody vegetation.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Establishing a Compensation Baseline, Special-status Plants

The term “compensation baseline,” as used in this document, refers to the process of establishing the areal extent or populations of special-status plants already present in the mitigation areas. Mitigation actions seek to enhance or restore habitat such that greater populations can be supported, thereby ensuring full replacement of functions and services.

This section of the master response responds to all or part of the following comment:

- *Drew Shell, California Native Plant Society [O_CNPS2-05]*

This comment (O_CNPS2-05) states that “the individual discussions of each rare plant species do not provide adequate overall context in which to evaluate the scale or significance of expected project impacts. Such context should include the current estimated population sizes, currently known remaining populations and their locations and sizes relative to those at the project area, current threats to overall long term survival and how the expected project impacts fit into that picture.” This response discusses how the existing special-status plant resources are incorporated into the baseline and success criteria for mitigation actions (see also the subsections on *Review of Available Information and Data Adequacy*, above).

For information on current estimated population sizes, remaining populations and locations of populations relative to the project area, and current threats please see the subsections entitled, *Review of Available Information and Data Adequacy, Fountain Thistle*, and *Review of Available Information and Data Adequacy, Other Special-status Plants*.

With regard to assessing expected project impacts relative to population sizes and current threats, it should be noted that mitigations are calibrated considering both aspects of the species long-term survival. In the case of five of the special-status plants – Marin western flax, San Francisco collinsia, Franciscan onion, and western leatherwood – the impacts of the proposed project would affect a small proportion of total plant populations. Mitigation, primarily consisting of reducing competition from exotic species but also including additional protection and habitat enhancements, are improvements that would not otherwise occur. Fountain thistle represents a special case, because the project could impact a fairly large proportion of the population. As a result, mitigation efforts focus primarily on creating and enhancing habitat for this species, and no impacts would be allowed to occur until the success of the enhancement can be demonstrated.

The proposed mitigations directly address known threats to rare plants. For example, under Mitigation Measure M-BI-8a, as revised, the SFPUC would remove and control exotic plants to improve habitat conditions adjacent to areas containing target native plant species. To facilitate

recolonization, salvaged seed may be sown in areas where habitat is deemed to be restored. Transplantation will be considered only as a contingency action in the case that success criteria are not otherwise achieved (see the discussion under the heading, *Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts – Fountain Thistle, Marin Western Flax, and Crystal Springs Lessingia*, above).

To demonstrate compliance, subsequent annual survey counts or samples, or area occupied by a special-status species, as approved by the resource agencies, would be carried out in the compensation area to determine that an appropriate number of special-status plants are present to offset losses resulting from project impacts (see below). These would be carried out within the mitigation areas so that enhancement, above and beyond the quantities and acreages of existing special-status plant populations, or occupied habitat, can be documented.

In the case of special-status plants whose populations are large and fluctuate considerably from year to year, such as the annual Crystal Springs lessingia, an additional mechanism is needed to evaluate population changes with respect to satisfaction of mitigation objectives. This mechanism is the establishment of reference sites (see below); these are nearby, ecologically similar but unmanaged sites where plant populations may be observed to fluctuate naturally in response to weather and other natural factors. By comparing the population fluctuations at the reference site with those in the managed area, the proportional benefit of the management actions can be calculated.

Success Criteria

This section of the master response responds to all or part of the following comments:

- Drew Shell, California Native Plant Society [O_CNPS1-03]
- Drew Shell, California Native Plant Society [O_CNPS2-21]

Both of these comments fundamentally question the accountability of the mitigation program. They state that annual monitoring is insufficient to demonstrate satisfaction of mitigation, and that five years is insufficient to demonstrate population viability in enhancement and restoration areas and to deal with ecological contingencies.

The mitigation program has been elaborated on in many subsections of the Master Response; as is discussed elsewhere, mitigation would be carried out in advance of impacts, and in the case of the listed species and Crystal Springs lessingia, would be carried out over a period of several years, still in advance of operational impacts. This responds to the concern that five years is an insufficient length of time to demonstrate mitigation success. With regard to the annual monitoring, it should be noted that seasonal monitoring (that is, more frequent than annual counts or other assessments) can lead to a misperception that conditions in a single season represent the status or trend of the population as a whole.

For the reasons discussed in the subsection above entitled, *Development of a Mitigation Plan for Special Status Plants and Serpentine Habitats*, implementation of actions at mitigation sites would compensate for potential project effects through plant replacement and/or habitat expansion and

meet the established performance standard of no net loss of habitat functions and services. Success criteria, as described below, include ecologically-based standards to determine whether the mitigation achieves the performance standard for each targeted species, as agreed upon by the resource agencies. To summarize previous relevant comment responses: for listed planted species and Crystal Springs lessingia, the baseline counts ensure that existing populations are not counted as mitigation; "Stepwise" implementation of mitigation ensures that 1:1 plant-for-plant compensation will be a pre-requisite for raising the level of the reservoir. For other special-status plants, compensation by area or number of individuals would be achieved before the project is implemented.

The type of language that will be included in the final MMPs under success criteria are described below for each resource. The final success criteria shall provide additional detail and specificity as needed to determine whether compensation objectives are achieved in accordance with resource agency permitting requirements.

The following text is added to follow the additional text revised in the earlier subsections entitled Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts and Implementation of Mitigation Actions in Advance of Operational Impact, in Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-107. The identical text revision is made to Chapter 6, page 6-33.

In general, mitigation is planned for areas in or near occupied habitat for one or more special-status plant species. The relative abundance of target species in a given mitigation site will be based on an increase over the *baseline population*, which would be determined by a baseline survey of the mitigation site as well as a reference site located nearby in similar ecological conditions. Many of the target species are annuals or short-lived perennials whose populations may fluctuate considerably from year to year based on weather conditions or other natural variables. Annual adjustments to the quantity of the baseline population shall be made using the variation observed in the *reference population*.

For example, if the success criterion for target species A is an increase of 100 plants and the baseline population is 400 plants in the baseline survey in 2010, the target population is 500 plants. However, if the reference population in 2012 has declined by 10 percent, then the baseline population would be adjusted to 360 plants (400 plants x 90 percent) and the target would be adjusted to consist of an increase in 90 plants (100 plants x 90 percent). Thus, the target population for 2012 would be 450 plants (baseline 360 plants plus adjusted increase of 90 plants = 450 plants). Some of the details of the determination of success criteria will be developed in consultation with the resource agencies, such as whether the population criterion will be based on the total number of individuals, or the number of flowering individuals. This may vary by species.

The preferred site for mitigation for fountain thistle, Marin western flax, and Crystal Springs lessingia is the Fountain Thistle Management Area (FTMA). As shown in Figure 5.13-5, this site supports or is very near known populations of these three special-status species. For the three other species requiring mitigation, western leatherwood, Franciscan onion, and San Francisco collinsia, mitigation actions shall be carried out elsewhere on SFPUC Peninsula

watershed lands, as described above. The alternate sites are in proximity to extant populations of the target species.

The primary approach to mitigation for special-status plants is the creation, enhancement, or restoration of habitat near existing populations, with the reasonable anticipation that the plants will colonize suitable habitat. Sowing of such sites with seed salvaged from impact sites may be employed, where feasible, to speed up the colonization process. Transplanting is not a preferred approach, in large part because it tends to be less successful, in the long-term, than habitat creation, and requires ongoing care while plants become established, something that often results in high mortality rates. Thus, although transplantation is not a strategy in mitigation for this project, it may be employed as a contingency action if success criteria are not readily met.

Franciscan onion. Since the area predicted to be impacted is 0.02 acre, two-thirds of the total area occupied by Franciscan onion in the project area, it is assumed that the number of individuals potentially impacted is two-thirds of the total number of individuals (214), or 143 plants. Therefore, the success criterion is an increase of 143 Franciscan onion plants over the baseline, and/or an increase in occupied habitat of 0.02 acre. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

Fountain thistle. The success criterion for this species is an increase of fountain thistle plants over the baseline and/or an increase in occupied habitat equal to that lost to inundation. This could be up to 8,024 fountain thistle individuals and 0.30 acre of occupied habitat, but could be less if impacts are less than predicted. Mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.075 acre and/or 2,006 individuals. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

San Francisco collinsia. Since the area predicted to be impacted is 0.01 acre and an unknown number of individuals, the success criterion is an increase in occupied habitat of 0.01 acre prior to the rise in reservoir elevation. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

Western leatherwood. The success criterion for western leatherwood is the establishment or significant enhancement in the vigor of up to 28 leatherwood plants above the reference population. The increased or enhanced population must be realized prior to the rise in reservoir elevation and persist through the full rise in reservoir elevation plus an additional five years.

Marin western flax. The predicted impact on Marin western flax is 0.002 acre and an unknown number of individuals. The success criterion is, therefore, an increase in occupied habitat of 0.002 acre. This mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum

reservoir operating elevation, or 0.0005 acre. The increase in occupied habitat must persist through the full rise in reservoir elevation plus an additional five years.

Crystal Springs lessingia. The predicted impact on Crystal Springs lessingia is 2.59 acre and an unknown number of individuals. The success criterion is, therefore, an increase in occupied habitat of 2.59 acres. This mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.65 acre. The increase in occupied habitat must persist through the full rise in reservoir elevation plus an additional five years. As an alternative to the use of occupied acreage as a measure of success, population numbers may be used to compare the number of plants impacted to the increase in mitigation management areas. The reference population would then be used to demonstrate that the proportion of increase in plants in a given year is attributable to management actions as opposed to natural fluctuation.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

The following two species do not require success criteria for the reasons stated:

Fragrant fritillary. The potential impact of fragrant fritillary is less than significant because no plants are located within the proposed increased maximum reservoir operating elevation. Thus, no mitigation is proposed for this species and no success criteria are set.

Arcuate bush mallow. The potential impact of arcuate bush mallow is less than significant because no plants are located within the proposed increased maximum reservoir operating elevation. Thus, no mitigation is proposed for this species and no success criteria are set.

Contingency Planning

This section of the master response responds to all or part of the following comments:

- *Drew Shell, California Native Plant Society [O_CNPS2-20]*

The commenter states that there is some uncertainty as to whether the proposed mitigations presented in the Draft EIR would achieve full mitigation for special-status plants. This master response provides more detail on the mitigation strategy for special-status plants in the previous subsections. However, contingency actions must also be described to provide assurances that full replacement of habitat functions and services will be achieved (see also *Adaptive Management* in the subsection *Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats*).

If success criteria are not met, the Draft EIR (Vol. 1, Chapter 5, Section 5.13, page 5.13-107) states that for all special-status plants, the SFPUC shall fully compensate to achieve no net loss of habitat functions and services. If compensatory habitat is not suitable at sites already selected for mitigation of project impacts, habitat enhancement would be carried out at appropriate nearby sites.

Rationale for Overlapping Mitigation

This section of the master response responds to all or part of the following comments:

- Drew Shell, California Native Plant Society [O_CNPS1-03]
- Drew Shell, California Native Plant Society [O_CNPS2-14]
- Drew Shell, California Native Plant Society [O_CNPS2-20]

Comment O_CNPS2-14 disputes SFPUC's plan to mitigate for more than one species at a single site, stating, "different plant species can have very different needs...more sites provide greater diversity...and that by overlapping mitigation efforts at a single site the combined impacts across all sensitive plant species and communities are not adequately mitigated."

Serpentine bunchgrass, Crystal Springs fountain thistle, Marin western flax, and Crystal Springs lessingia have similar and overlapping habitat requirements and closely co-occur, both in the project area and in the FTMA. Thus, the same site can and should provide adequate mitigation for these resources. Put another way, it is ecologically desirable to mitigate for multiple species in the same area because the interactions between these species facilitate diversity and stability.

For all special-status species, the mitigation measure states that if the primary mitigation site is not capable of providing compensation habitat, then other areas on the watershed would be identified and utilized for this purpose.

Role of Transplanting, Seed Collection, and Salvage

This section of the master response responds to all or part of the following comments:

- Drew Shell, California Native Plant Society [O_CNPS2-15]
- Drew Shell, California Native Plant Society [O_CNPS2-16]
- Drew Shell, California Native Plant Society [O_CNPS2-22]
- Drew Shell, California Native Plant Society [O_CNPS2-23]
- Tiffany Knight, Washington University in St. Louis [I_Knight-03]

The central assertion in these comments is that establishing new plants away from project impacts (known as off-site mitigation or *ex situ* conservation) is not supported by CNPS (Comment O_CNPS2-23). Comment O_CNPS2-15 states that the project "would attempt to compensate...by creating new, unproven habitat elsewhere." Comment I-Knight-03 states that "there is no proof of concept that transplants will survive when moved from natural populations or greenhouse settings to [a] proposed mitigation site."

In this discussion, the term *translocation* is used as a collective term to refer to the intentional gathering of living plants and propagules (seeds) for planting elsewhere. *Transplanting* refers to the practice of planting living plants (rather than seeds), either greenhouse-grown or salvaged from the wild, back into the wild. *Sowing* or *seeding* refers to the intentional placement of seeds for the purpose of expanding occupied habitat. Maintaining genetic diversity in endangered and threatened populations is a priority, yet mitigation should not depend entirely upon less reliable methods such as transplanting.

For serpentine bunchgrass, fountain thistle, Crystal Springs lessingia, and Marin western flax, the mitigation plan depends primarily on restoring and enhancing suitable habitat, removing litter and other accumulated biomass, by controlling exotics such as jubata grass and Monterey pine in seeps and springs, and by controlling yellow star thistle and non-native upland grasses in serpentine grassland and on thin soils that otherwise could support special-status and other serpentine-associated species. Sowing of seeds may be employed to speed up the process, but transplanting is not proposed.

The SFPUC proposes to obtain the appropriate permits to salvage the seeds of fountain thistle, Crystal Springs lessingia, and Marin western flax in areas certain to be inundated in order to preserve the genetic diversity or expand the population sites embodied there. The seeds would be used to sow newly restored habitat if natural recolonization does not take place readily. If not needed for this purpose, the seeds would be given to the appropriate seed bank to be maintained for conservation purposes. As a last resort, the seeds could be used for growing plants to be transplanted into restoration areas, but this method is not expected to be necessary.

Salvaging individual plants (as opposed to seed) of species such as fountain thistle is not planned as part of this mitigation proposal because of the typically poor survival rates of transplants. However, salvaging plants which cannot survive could be carried out, as feasible, and with appropriate permits, and the resulting propagules could be made available for conservation or research. The SFPUC would obtain the necessary permits from the appropriate resource agencies for the salvage of plants or propagules of listed plants.

Monitoring of Special-status Plants and Serpentine Habitats

This section of the master response responds to all or part of the following comment:

- *Drew Shell, California Native Plant Society [O_CNPS2-21]*

This comment states that annual monitoring is insufficient to demonstrate satisfaction of mitigation, and that five years is insufficient to demonstrate population viability in enhancement and restoration areas and to deal with ecological contingencies.

The mitigation program has been elaborated on in many subsections of the master response; as is discussed elsewhere, mitigation will be carried out in advance of impacts, and in the case of the listed species and Crystal Springs lessingia, will be carried out over a period of several years, still in advance of operational impacts. This responds to the concern that five years is an insufficient length of time to demonstrate mitigation success.

The CDFG requires a minimum of five years of monitoring to ensure that mitigation requirements have been satisfied; however, a longer period of monitoring is anticipated for this project. One, or more likely, two to three years of baseline data would be collected while habitat enhancement and restoration is initiated at the Fountain Thistle Management Area. As specified above, multiple years of monitoring would then be carried out to demonstrate that the mitigation success criteria have been met for each of the 1-foot incremental increases in reservoir elevation. For those species for which mitigation must be completed in advance of the project, monitoring would be initiated

before any increase in water surface elevation and would continue to be monitored and adaptively managed for five years following. Thus, the total monitoring period would begin at the initiation of the mitigation actions and end five years or more after they are completed. It is therefore highly likely that the monitoring period would extend well beyond five years, and possibly as long as 10 years. See also the discussion under the subsection, *Development of a Mitigation Plan*.

As noted by Comment O_CNPS2-21, annual monitoring is the minimum effort required to track effectiveness of mitigation under CEQA. However, more frequent checks and adjustments would be made during critical periods in the restoration process to ensure that the considerable investment in time and resources to meet success criteria are on track. Details on such monitoring would be developed as part of the MMP and would be site- and resource-specific (see also *Adaptive Management* subsection, above).

4.17.3 Individual Comments and Responses

Extent of California Regional Water Quality Control Board Jurisdiction

Comment B1, RWQCB Jurisdiction

The following comment is included under Comment B1:

- William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-01]

“On pages 5.13-51 and 5.13-56 of the DEIR, the text incorrectly indicates that the total extent of federal jurisdictional waters in the project study area is 308.49 acres and that 1,033.61 acres of open water are under state jurisdiction only. According to Appendix H, 308.49 acres of federal jurisdictional waters will potentially be affected by the Project, but 1,342.10 acres of federal jurisdictional waters are within Project study area. The DEIR should be revised to correct this discrepancy.

Please also note that the text on pages 5.13-51 and 5.13-56 incorrectly references the Wetland Determination Report as Appendix G when it is actually Appendix H. The DEIR should be revised to correct this discrepancy.

Lastly, the DEIR should be revised to indicate that the 0.06 acres pond on top of the dam is a water of the state. This pond receives water from runoff and seeps and supports red-legged frogs. As a result, the pond has the beneficial use of preserving endangered species and is a water of the state.” (William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-01])

Response

In response to this comment, the identical paragraph in two places—Draft EIR page 5.13-51, last paragraph, and page 5.13-56, fourth full paragraph (Vol. 1, Chapter 5, Section 5.13)—is revised as follows:

The total extent of federal and state jurisdictional waters in the project study area is 1,342.10 ~~308.49~~ acres, ~~which fall under state jurisdiction as well~~ (see below). In

~~addition, 1,033.61 acres of open water are under state jurisdiction only, (see Appendix CH of this EIR; Entrix/MSE, 2007).~~

In addition, on Draft EIR page 5.13-68, end of the last paragraph (Vol. 1, Chapter 5, Section 5.13), the text is revised as follows:

The riparian component of the wetlands loss would be 113 linear feet of channel. In addition, 0.06 acre of artificial pond on top of the dam would be lost. The artificial pond is not considered jurisdictional waters of the U.S. and thus is not protected by the Corps, but the pond is used as breeding habitat by the CRLF and receives runoff from seeps, and is therefore a water of the state.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Endemism

Comment B2, Definition of Endemism as it Relates to Fountain Thistle

The following comment is included under Comment B2:

- *Tiffany Knight, Washington University in St. Louis [I_Knight-01]*

"Concern #1: Definition of endemism in the EIR, and implications of this definition for *Cirsium fontinale*

On page 15, endemism is defined as "species that are geographically restricted". However, this is a very simplistic definition. It suggests that the species is dispersal-limited, and if moved to other locations, populations would thrive. Endemism is typically more than range restriction, and in most cases the term is used for species with specific, narrow habitat requirements.

In the EIR, habitat associations of *Cirsium fontinale* include serpentine, grasslands and woodlands. However, this species is typically found in serpentine habitats, and likely has strong preferences for this habitat type. Its existence in grassland habitats might be due to runoff of nutrients from serpentine soils into those grasslands and its persistence in woodlands could represent a sink population receiving propagules from a large serpentine source population. While habitat preferences of *Cirsium fontinale* have not been extensively studied (but should be, as I outline below), the fact that a serpentine habitat supports the largest population of this species suggests that this habitat type allows high fitness of the plant." (*Tiffany Knight, Washington University in St. Louis [I_Knight-01]*)

Response

The Glossary of the Draft EIR, page xii, includes the following definition: "Endemism – Species that are geographically restricted," as noted by the commenter. The purpose of this definition is to explain a technical term that is likely unfamiliar to the layperson; therefore, the definition was intentionally simple. Although this definition states that an endemic species is geographically restricted, it does not suggest or imply that dispersal limitation is the cause, since this is only one of many possible reasons. Endemism describes a phenomenon (limited distribution of a species) but does not define the factors

contributing to it, which may be unknown, poorly defined, or many-faceted, and could include habitat characteristics; historical conditions; predator, herbivore, pollinator, or disease factors; or dispersal limitations, among others.

Vegetation Mapping

Comment B3, Serpentine Bunchgrass not Adequately Mapped

The following comment is included under Comment B3:

- *Drew Shell, California Native Plant Society [O_CNPS2-01]*

"2.1. Serpentine bunchgrass not adequately mapped

Instances of serpentine bunchgrass are described in the DEIR as being extensive on the eastern shores of both the upper and lower reservoirs, and there are in fact proposed mitigations for this rare plant community. Yet the vegetation maps in the DEIR do not separately identify this plant community, instead only identifying "non native grassland". The same is also true of the detailed maps of specific impacts presented in Appendix I. This prevents the independent evaluation of impacts on serpentine bunchgrass, or an understanding of where that community is found in relation to other impact sites (which is important for an understanding the overall extent of impacts and thus the overall adequacy of proposed mitigations).

In addition, discussion of serpentine bunchgrass within the DEIR is somewhat dismissive of the condition or importance of those instances found directly in the project area itself, due to the presence of non native grasses in those areas as well. This fails to acknowledge the overall context in which these bunchgrass meadows exist, and their continuing importance despite the presence of non natives. The unfortunate reality is that even the serpentine meadows in our area are continuously under assault from a broad array of threats such as development, invasive species, climate change, and changes in soil chemistry associated with auto exhaust. While such meadows may not be pristine, they remain the most important and most viable sites for long term preservation of a broad array of native California meadow species, including many rare and endangered species. Therefore any loss of serpentine grassland, regardless of the presence of non native grasses, must be considered a significant and irreparable impact." (*Drew Shell, California Native Plant Society [O_CNPS2-01]*)

Response

The commenter is correct that the technical report did not identify the serpentine bunchgrass natural community individually and therefore did not map the extent of this resource. However, the impact analysis recognized the presence and location of this sensitive natural community in the grasslands along the eastern side of Upper and Lower Crystal Springs Reservoirs (see Draft EIR page 5.13-3, Vol. 1, Chapter 5, Section 5.13). It analyzed the impacts on this sensitive natural community, and proposed mitigation measures to enhance serpentine bunchgrass habitat to compensate for project-related losses.

Using publicly available information sources such as the soil survey for eastern San Mateo County (USDA, 1991) and California Natural Diversity Database (CNDDB)

records, the Draft EIR described a rationale for calculating the extent of serpentine bunchgrass based on the presence of serpentine-associated soils and the occurrence of special-status plants associated with such soils and the serpentine bunchgrass community. The EIR then estimated the proportion of the mapped non-native grassland that could be attributed to serpentine bunchgrass, concluded that the project impact on a sensitive natural community was potentially significant, and used the acreage in calculating impacts and mitigation. This process is described on Draft EIR page 5.13-84 (Vol. 1, Chapter 5, Section 5.13). Thus, the Draft EIR recognizes the importance of the natural community, and also proposes Mitigation Measure M-BI-7a (Serpentine Grasslands Enhancements; see Draft EIR page 5.13-102; Vol. 1, Chapter 5, Section 5.13) to compensate for the loss of this resource. The mitigation measure recognizes the assault upon the resource from influences (such as invasive non-native species) other than the project and proposes to offset project effects by counteracting these influences. Thus, the resource description, impact analysis and mitigation measures fully address impacts on serpentine bunchgrass habitat.

Comment B4, Vegetation Mapping Outside the 291.8-foot Elevation

The following comment is included under Comment B4:

- *Drew Shell, California Native Plant Society [O_CNPS2-02]*

"2.2. Inadequate mapping outside 291.8 foot level

Vegetation mapping and detailed mapping of impacted rare plant species do not extend outside the 291.8 foot impact level. This prevents an evaluation of project impacts in a broader context, such as what portion of existing populations might remain after the project, and thus how viable those remaining populations may be." (*Drew Shell, California Native Plant Society [O_CNPS2-02]*)

Response

Typically, the analysis of rare plants and sensitive natural communities outside the proposed project area depends on other existing sources such as the CNDDDB and California Native Plant Society records. The special-status plants on Pulgas Ridge and other nearby areas have been well inventoried, and this information is displayed on Draft EIR Figure 5.13-2 on page 5.13-13 (Vol. 1, Chapter 5, Section 5.13). Additional information about the extent of special-status plants is also presented in the Setting section on pages 5.13-15 through -22 and in more detail in the Technical Report in Draft EIR Volume 3, Appendix I. Further, the analysis shows clearly that impacts were not predicted for upland species growing above 291.8 feet elevation. Even exceedences would not rise above 291.8 feet, and long-term groundwater tables likewise would not rise to levels that high. The only potential impact that could be speculated would be that very small areas of seeps and springs, already at elevations above 291.8 feet, could be augmented by the rise in groundwater levels well below this elevation. Any changes in such features would affect an exceedingly small (i.e., not significant) acreage.

Significance Criteria

Comment B5, Significance Criteria for Wetlands

The following comment is included under Comment B5:

- William B. Hurley, *San Francisco Bay Regional Water Quality Control Board [A_RWQCB-02]*

"The following significance criterion was used to evaluate impacts to wetlands:

- Have substantial adverse effect on federally protected wetlands defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.

This criterion should be revised to include adverse effects to wetlands protected by the state under the Porter-Cologne Water Quality Control Act. In addition, the criterion should clearly indicate that indirect impacts to wetlands are also considered significant. Indirect impacts include, but are not limited to, excessive erosion and/or sedimentation; additional water (flooding); reduced water supply or flows; creating a condition of pollution; and watershed degradation." (*William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-02]*)

Response

The significance criterion cited by the commenter (from Draft EIR page 5.13-60, Vol. 1, Chapter 5, Section 5.13) is verbatim text from Appendix G of the CEQA Guidelines. It is intended as one component in the analysis of impact significance, but not the only one. The Draft EIR, pages 5.13-68 and 5.13-69 (Vol. 1, Chapter 5, Section 5.13), clearly recognizes that impacts on waters under state jurisdiction would be significant. The discussion on Draft EIR page 5.13-69 adequately describes indirect impacts, and no changes to the significance criteria are warranted.

Special-status Wildlife Species

Comment B6, San Francisco Garter Snake

The following comment is included under Comment B6:

- Charles Armor, *California Department of Fish and Game – Bay Delta Region [A_CDFG-04]*

"Special-status Species at Lower Crystal Springs Dam

According to the DEIR, "The use of heavy equipment in or adjacent to the San Mateo Creek drainage, the transport of personnel and equipment to the site, and the use of temporary storage laydown sites would pose a direct threat of mortality or injury to both the listed resident species the California red-legged frog and San Francisco garter snake (SFGS), (page 5.13-72 DEIR)." Fish and Game Code Section 5050 identifies San Francisco garter snake as a fully protected species. No provision of the code or any other law may be construed to authorize the issuance of permits or licenses to take any fully protected reptile or amphibian. "Take" is defined in Fish and Game Code as hunt, pursue, capture or kill, or attempt to hunt, pursue, catch, capture, or kill. All take of SFGS must be avoided." (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-04]*)

Response

Consistent with the comment and as described on Draft EIR page 5.13-52 (Vol. 1, Chapter 5, Section 5.13), “take” is defined as “harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct.” This is the broader definition from the federal Endangered Species Act, and inclusive of the California Endangered Species Act definition. Both construction and operation of the proposed project were determined to result in significant impacts on San Francisco garter snake, as described in Impacts BI-3 and BI-8 (pages 5.13-71 to 5.13-73 and 5.13-85 to 5.13-89, respectively). Measures that would be implemented to avoid “take” of SFGS are described on Draft EIR pages 5.13-101 and 5.13-102 (Vol. 1, Chapter 5, Section 5.13). They include exclusion fencing, project-related vehicle speed limits, intake screening, and snake- and amphibian-friendly erosion control materials. With implementation of these measures, no impacts on San Francisco garter snake would occur.

Comment B7, San Francisco Dusky-Footed Woodrat

The following comments are included under Comment B7:

- Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-09]

“Mitigation Measure M-BI-3f: Pre-construction Clearance Surveys for San Francisco Dusky-Footed Woodrats

The mitigation measure indicates if young woodrats are present during nest disassembling, the biologists shall discontinue disassembling and return at least 24 hours later to allow time for the young to be relocated. It is unclear what is meant by returning 24 hours later to allow time for the young to be relocated. If young are detected, we recommend the qualified biologist make an age estimate during the initial nest disassembly to predict when the young will leave based on the species life-history. Once this estimate is made, the nest should not be tampered with until the young have left the nest since this is a State species of special concern.” (Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-09])

Response

In response to this comment, the text of Mitigation Measure M-BI-3f, second paragraph, on Draft EIR page 5.13-101 (Vol. 1, Chapter 5, Section 5.13) and on page 6-27 (Chapter 6, Section 6.13), is amended as follows:

If the minimum fencing distance cannot be achieved and the middens cannot be protected and/or avoided, a qualified biologist shall disassemble middens, or, if adjacent habitat is not suitable, trap and relocate woodrats out of the construction area (using live traps) prior to the start of construction. In addition, the biologists shall attempt to relocate the disassembled midden to the same area where the woodrats are released. If young woodrats are present during disassembling, the biologists shall discontinue disassembling and return at least 2448 hours later to allow time for the young to be relocated. The midden may not be fully disassembled until the young have left.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Special-status Plant Species (not Fully Addressed in the Master Response)

Comment B8, Kings Mountain Manzanita

The following comment is included under Comment B8:

- *Drew Shell, California Native Plant Society [O_CNPS2-03]*

"2.3. Potential for Kings Mountain Manzanita described as low

The site assessment for the project describes the potential for occurrence of Kings Mountain Manzanita as low, based on assumptions that this species does not occur below 1000 ft and is primarily found to the west of the project area. Yet this species has been observed and documented both to the south (at Teague Hill Open Space) and to the east (at Edgewood County Park), and also at elevations below 850 ft (at Edgewood County Park). The potential for occurrence in the project area should therefore be at least moderate, if not high." (*Drew Shell, California Native Plant Society [O_CNPS2-03]*)

Response

Comment acknowledged. The conclusion that Kings Mountain manzanita has a low potential to occur in the project area, as shown in Table 5.13-1 on Draft EIR page 5.13-16 (Vol. 1, Chapter 5), is based on thorough, protocol-level surveys at times of the year when the species would be readily detectable. These surveys were carried out by ENTRIX as part of the *Biological Resources Technical Report* (Draft EIR, Vol. 3, Appendix I) and no occurrences were identified. Thus, the conclusion regarding the potential for occurrence of Kings Mountain manzanita was primarily based on the negative results of careful field survey in the project area and, to a much lesser extent, the known elevation range and habitat of the species.

Comment B9, Fragrant Fritillary

The following comments are included under Comment B9:

- *Drew Shell, California Native Plant Society [O_CNPS2-04]*
- *Drew Shell, California Native Plant Society [O_CNPS2-19]*

"2.4. Fragrant Fritillary not adequately surveyed for

Fragrant Fritillary is described as historically being present in the project area, as indicated by CNDDDB records, but not observed during 2006 site surveys and thus not considered for mitigation. This is a significant oversight given the long standing documented presence of this species at this site, and the characteristics of the flower and life cycles of this species.

The CNDDDB reports for Fragrant Fritillary indicate a long standing presence in the project area, with numbers in the 1000s observed in 1988 and 1989, close to 1000 observed in 2000, and plants still extant as of the last official report in 2003. Furthermore, as a perennial, individuals of this species are likely to continue to exist even in seasons where fewer numbers are observed. Such

large and perennial plant populations are unlikely to simply “wink out” in just 3 years (unless something major has changed at the site, but no such changes are known). Finally, CNDDDB reports specifically describe populations of these species in the project area as being associated with other rare species known to still be extant, including Fountain Thistle and Marin western flax.

As a perennial, and one subject to the impacts of deer browsing on its flower heads, this species may have seasons where the observed number of individuals is low (perhaps even 0) even when the population is still present and viable. Failure to acknowledge this possibility, and to provide additional targeted surveying for a rare plant known to exist at the project site for many years, is a significant oversight.” (Drew Shell, *California Native Plant Society* [O_CNPS2-04])

“3.7. No mitigation for Fragrant Fritillary

As indicated above, this species has a long standing documented presence in the project area, despite the fact that it was not observed during 2006 field surveys. There is a very high likelihood that this species is still present, and was simply missed during 2006 due to variations in flower timing or other circumstances. Failure to provide additional focused surveying for this plant, or to consider potential mitigations for loss of habitat, are a significant oversight.” (Drew Shell, *California Native Plant Society* [O_CNPS2-19])

Response

As stated on Draft EIR page I-31 (Vol. 3, Appendix I), ENTRIX found no fragrant fritillary (*Fritillaria liliacea*) in its field surveys, which were carried out in late April, near the end of the recognized flowering period for this species. However, subsequent to publication of the Draft EIR, it was found that an investigation by EIP in 1999 reported fragrant fritillary in the project area, co-occurring with Crystal Springs lessingia (*Lessingia arachnoidea*) and Marin western flax (*Hesperolinon congestum*). This report may be based on the same observation as that reported to the CNDDDB in 2000 and referenced in the comment above.

Because this information had been incorporated into the SFPUC GIS watershed database, it was possible to superimpose elevation data over the reported habitat occupied by fragrant fritillary. This analysis shows that the mapped populations were entirely above the 287.8-foot elevation and approximately half were above 291.8 feet. Because the populations are above 287.8 feet, they would not be affected by the increase in maximum normal operating elevation under the proposed project. In fact, the model of projected operations (see Draft EIR Volume 3, Appendix J and Appendix M, pages M-9 and M-10) predicts that exceedences above 287.8 feet and lasting for several days would occur infrequently. Exceedences above 287.8 feet, although brief, could potentially affect this bulb-producing perennial. However, such events are predicted to be very infrequent, brief in duration, and of very limited magnitude, particularly in the higher elevations of the exceedence zone. Since the reported populations are concentrated at the higher elevations of the future exceedence zone, this impact was concluded to be less than significant. However, management of the serpentine grasslands for other special-status plants, such as through invasive species control, would indirectly improve habitat for this species. For more information, please see the following subsections of Section 4.17.2,

Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation:

- Review of Available Information and Data Adequacy, Other Special-status Plants
- Summary of Impacts on Special-status Plants
- Impacts on Other Special-status Plants
- Success Criteria

Comment B10, Arcuate Bush Mallow

The following comments are included under Comment B10:

- *Drew Shell, California Native Plant Society [O_CNPS2-08]*
- *Drew Shell, California Native Plant Society [O_CNPS2-18]*

“– Arcuate bush mallow is not restricted to serpentine and has been reported over a much broader range than many of the other rare species in the project area, but this plant has suffered long, inexorable declines over many decades due to development, fire suppression, type conversion of habitat, and invasive species. The potential impacts on just 8 more plants in association with the project may not seem like much, but aside from one hillside in Edgewood County Park, the existing known individuals of this plant number no more than 2-3 dozen. As a result the loss of 8 individuals would in fact be a huge impact on the overall population of this plant, pushing it another step closer to possible extinction. Furthermore, the potential conversion and loss of its habitat is equally distressing. This species is known to respond vigorously from seed following fire, and thus areas where adult plants are found are also highly likely to host a significant and important seed bank from which future plants can grow. Alteration or destruction of such habitat therefore represents a significant loss that cannot be mitigated simply through the short term propagation of a comparable number of adult individuals elsewhere. The existing habitat quite literally represents decades or even centuries of activity by this species to find suitable habitat niches and establish adequate seed banks to ensure long term survival.” (*Drew Shell, California Native Plant Society [O_CNPS2-08]*)

“3.6. No mitigation for Arcuate Bush Mallow

No mitigation of any kind is provided for the potential loss of Arcuate Bush Mallow in association with the project. This plant does not currently occur down to the existing high water line in the reservoir, so the assumption that it would be able to do so after reservoir levels are increased is unfounded. Furthermore, as a perennial shrub generally found in relatively dry, upland scrub or chaparral settings, it is potentially susceptible to impacts associated with occasional inundation, a raised water table, or altered hydrology. As such, failure to mitigate for all impacts on this species below the 291.8 foot level is not an acceptable situation.” (*Drew Shell, California Native Plant Society [O_CNPS2-18]*)

Response

The Lead Agency acknowledges that arcuate bush mallow (*Malacothamnus arcuatus*) is rare, is found in very limited suitable habitat, and occurs around the periphery of Crystal Springs Reservoir. However, ENTRIX surveys conducted for the proposed project found no arcuate bush mallow below the 287.8-foot elevation. Thus, no impacts on this species

are predicted based on the increase in maximum normal operating elevation. The eight plants referenced by Comment O-CNPS2-08 are located in the potential exceedence zone and are shown in detailed mapping in Draft EIR Appendix I, pages I-220 through I-236. Although there is some potential for infrequent flooding in this zone, exceedences would be brief and infrequent, especially in the higher elevations, such as 289.8 and above. Inundation and potential damage to arcuate bush mallow would be brief and rare (see Draft EIR Volume 3, Appendix J and Appendix M, pages M-9 and M-10). Impacts would therefore be limited or might not result in mortality to the eight arcuate bush mallow plants. The conclusion was that the impact on this species would be less than significant, and no mitigation is proposed. CEQA does not require mitigation for impacts deemed less than significant. For more information, please see the following subsections of Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation:

- Review of Available Information and Data Adequacy, Other Special-status Plants
- Summary of Impacts on Special-status Plants
- Impacts on Other Special-status Plants
- Success Criteria

Impact on Plants due to Changes in Water Table

Comment B11, Analysis of Impacts on Plants due to Changes in Water Table

The following comment is included under Comment B11:

- Drew Shell, *California Native Plant Society* [O_CNPS2-11]

"2.6. No analysis of impact due to changes in water table

It is acknowledged that increasing the reservoir levels will impact the water table and hydrology in surrounding areas. This is described as a potential benefit to mitigation efforts for plants such as Fountain Thistle in areas outside the 291.8 foot level. However no comparable analysis is provided for any potential *negative* impacts on rare plant species or plant communities that might occur as a result of these changes, and thus no mitigations are proposed for any such negative impacts that might extend outside the 291.8 foot level." (*Drew Shell, California Native Plant Society* [O_CNPS2-011])

Response

The Draft EIR (Chapter 5, Section 5.13, pages 5.13-76 to 5.13-83) examined in detail the effects of changes in water table on upland natural communities, especially oaks and hardwood communities. It presented information from the scientific literature about the mechanisms by which large, slow-growing, and long-lived plant species such as oaks experience substantial damage from fairly brief and infrequent flooding and saturation events. The Draft EIR concluded that flooding below the proposed maximum reservoir elevation of 287.8 feet would result in a loss of tree-dominated communities, and that significant impacts could occur to these communities at elevations below 290 feet (Draft EIR, Chapter 5, Section 5.13, page 5.13-82). The rise in water table alone was concluded to

have no effect on upland communities because it would be at greater depth than the reservoir elevation. Flooding events above this elevation were predicted to be so brief and infrequent that they would not have a significant impact on oaks.

This was not the case for herb-dominated communities and some shrub communities. By their nature, herbs and shrubs have a smaller root volume, higher proportion of living roots to non-living (woody) roots, and higher rate of root regeneration compared with trees. Such plants recover more quickly from brief periods of inundation, even those species lacking special adaptations for saturated or flooded conditions. The observation that most shrub and herb communities are found growing down to the water's edge around the perimeter of Crystal Springs Reservoir is evidence that these communities can tolerate at least brief periods of inundation. The Draft EIR concluded that shrub- and herb-dominated communities would not be converted to other community types above the maximum reservoir operating elevation (Draft EIR, Chapter 5, Section 5.13, page 5.13-82) unless inundation was frequent and extensive. Similarly, any rise in groundwater would be limited to those elevations receiving frequent and extensive inundation, so no effects on upland herb- and shrub-dominated communities would result from groundwater alone.

The predicted effect of raising the reservoir elevation in relation to fountain thistle is different from the effect on upland communities and on other special-status plants in that fountain thistle depends on seeps and springs. Seep and spring features are expected to continue to exist under the project, albeit at a higher elevation, because the increase in reservoir elevation would also tend to raise the groundwater elevation. However, this effect is anticipated only in those very limited areas where seeps and springs already exist, such as within drainages. This kind of habitat is very limited in extent and would continue to be limited with implementation of the project. Under future with-project conditions, a more extensive alteration of habitat is not expected in uplands. Evidence for this is the fact that many, if not most, of the other special-status species associated with uplands are observed growing very close to the current year's highest reservoir elevation, suggesting that the rise in water table does not directly affect upland species.

Timing of Restoration and Mitigation Actions

Comment B12, Timing of Restoration and Mitigation Actions

The following comments are included under Comment B12:

- Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-07]
- Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-08]

“Mitigation Measure M-BI-1b: Avoidance and Restoration

This measure indicates all temporary impacts on wetland streams and riparian habitat would be fully restored within three years of completion of construction. All restoration work should be completed immediately following construction or should be mitigated as a permanent impact.” (Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-07])

"Mitigation Measure M-BI-1c: Wetlands Creation and Enhancement for Construction and Operational Impacts

This measure indicates there will be a no net loss of habitat functions and services because habitat compensation will be in place within five years of the initiation of construction. All habitat compensation should be in place before project impacts to avoid temporal loss of habitat function and value." (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-08]*)

Response

In response to this comment, the text of Mitigation Measure M-BI-1b, second paragraph, on Draft EIR page 5.13-91 (Vol. 1, Chapter 5, Section 5.13) and page 6-17 (Chapter 6, Section 6.13), is amended as follows:

Where it is not possible to avoid temporary loss of riparian habitat in construction areas, the SFPUC shall fully restore the functions and services of these habitats onsite, which will include revegetation of all graded surfaces with locally native plant species, and revegetation of channel banks disturbed by construction. Disturbed streambeds shall also be restored. Site restoration shall be undertaken in accordance with a detailed restoration plan or plans prepared by a qualified restoration ecologist and shall be consistent with all required permits, and all planting material shall be pathogen-free. The SFPUC shall initiate mitigation actions as soon as possible. Restoration of temporary-use construction areas shall begin as soon as they are no longer needed. Habitat mitigation and enhancement at compensation sites shall begin as soon as possible after certification of the EIR. The final habitat restoration plan or plans shall provide, at a minimum:

The third item below the second paragraph of Mitigation Measure M-BI-1b on Draft EIR page 5.13-91 (Vol. 1, Chapter 5, Section 5.13) and page 6-17 (Chapter 6, Section 6.13), is amended as follows:

Success Criteria. The final habitat restoration plan(s) shall include ecologically based criteria that will be used to determine whether the restoration projects are achieving their objectives (i.e., full restoration within five years). The success criteria shall be based on attributes that are objective and verifiable, such as percent survival of plantings or percent cover achieved by planted materials. The success criteria shall include but not be limited to the following:

- Total areal extent of the wetland shall be as large as, or greater in size, than its design acreage.
- Total areal extent of vegetation shall comprise more than 50 percent total cover in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) wetland plant species.
- Invasive species shall not exceed 10 percent total cover.
- The hydroperiod shall provide, at a minimum, 30 days of inundation of the site but inundation shall not persist throughout the entirety of the dry season.

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Permit Required for Take of State-listed Plants

Comment B13, Permit Required for Special-status Plants

The following comment is included under Comment B13:

- *Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-06]*

“The Draft EIR discloses impacts to San Francisco fountain thistle (SFFT) which include potentially inundating 0.30 acres where SFFT is present. A California Endangered Species Act take permit will be required for take of SFFT and Marin western flax (*Hesperolinon congestum*) (MWF) from project activities.

Mitigation Measure M-BI-8a

This mitigation measure indicates for impacts to SFFT and MWF, “Habitat would be replaced to achieve no net loss of habitat functions and services for the species (page 5.13-107).” We are particularly concerned about the loss of genetic viability associated with loss of individual plants. The current SFFT population condition is such that loss of individual plants will reduce this species’ ability to recover from endangered status. To prevent the loss of genetic viability from project impacts, protective measures must include individuals, (not habitat only) to be successfully established and protected prior to project impacts.” (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-06]*)

Response

The California Endangered Species Act take provisions are described on Draft EIR page 5.13-52 (Vol. 1, Chapter 5, Section 5.13), and Draft EIR page 3-41 states that the SFPUC would be required to obtain a permit and authorization from the CDFG prior to project construction. The SFPUC acknowledges that a take permit would be required from the CDFG before any losses of fountain thistle and Marin western flax are incurred. Impacts on these species are described in Impact BI-8 on Draft EIR pages 5.13-85 to 5.13-87, and would be mitigated by Mitigation Measure M-BI-8a (Listed and Nonlisted Special-status Plants) on page 5.13-107.

Genetic variability associated with the loss of individual plants is not a significance criterion as defined by CEQA; thus, the “no net loss” criterion does not apply specifically to impacts on genetic diversity. However, the SFPUC, as watershed manager, acknowledges the need for maintaining genetic variability in the conservation of threatened and endangered species. For example, the SFPUC has proposed measures to preserve the genetic variability of fountain thistle and Marin western flax populations through seed collection as part of its mitigation program, as described above in Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, under the subsection, *Role of Transplanting, Seed Collection, and Salvage*.

Crystal Springs Lessingia

Comment B14, Crystal Springs Lessingia

The following comment is included under Comment B14:

- Drew Shell, *California Native Plant Society* [O_CNPS2-07]
- “– Crystal Springs lessingia is, as its name implies, centered primarily around Crystal Springs itself. While there are reports from north bay (but no CNDDDB reports) as well as outlier sightings not on the watershed itself, the vast majority of populations and individuals of this plant are still restricted to the Crystal Springs watershed itself, and in particular to serpentine grasslands along the eastern margins of the reservoirs. As such, the projected loss of a full 2.6 acres of habitat for this plant, along with potentially significant impacts to another 3 acres, is a huge and seriously grave impact. Such an enormous and permanent loss of prime habitat at the very heart of the limited distribution of this highly localized plant cannot be mitigated to less than significant levels, nor can it adequately be mitigated for via attempted mitigation at a mere 1:1 ratio.” (Drew Shell, *California Native Plant Society* [O_CNPS2-07])

Response

The Lead Agency acknowledges that Crystal Springs lessingia is a very rare and restricted species. ENTRIX reported some 5,800 plants at nine locations encompassing a total area of 5.42 acres (and completely encompassing the populations referenced by the commenter). Only 2.59 acres and an assumed corresponding proportion of the reported plants are below 287.8 feet elevation and would be affected by the proposed project. Although Crystal Springs lessingia is restricted geographically, large areas of occupied habitat are situated upslope from the proposed maximum reservoir elevation. To give a regional perspective, the Golden Gate National Recreation Area (GGNRA) mapped 72.6 acres of Crystal Springs lessingia in the Peninsula watershed in 2001, and the California Natural Diversity Database (CNDDDB) reported tens of thousands of plants among its nine reported localities. Therefore, the affected acreage represents a relatively small percentage of habitat occupied by Crystal Springs lessingia, and the proportion of affected individuals compared with the total population is relatively small as well. Nevertheless, the Draft EIR concluded that these impacts were significant, and identifies feasible mitigation measures to compensate for the loss of this habitat.

As discussed in Section 4.17.1, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, under the subheading *Review of Available Information and Data Adequacy, Other Special-status Plants and Impacts on Other Special-status Plants*, Crystal Springs lessingia readily occupies very open serpentine substrates and has been observed to occupy habitat below the current maximum reservoir operating elevation of 283.8 feet when the reservoir does not fill completely. Although the Draft EIR concluded that 2.59 acres of currently occupied habitat would be impacted, some of this acreage, essentially portions of the exposed lakebed, would in fact be occupied in years when the reservoir does not fill to its

maximum capacity. Thus, the assumption of 2.59 acres of impacted Crystal Springs lessingia habitat is a conservative estimate.

Impacts in the exceedence zone were considered less than significant because in most years the exceedence zone would not be inundated at all and all suitable habitat could be occupied by Crystal Springs lessingia. Currently-documented distribution of this species indicates that this species is present in areas subject to occasional inundation. Even in years when exceedences occur, the areas inundated would be brief, particularly in the upper portion of exceedence zones. Moreover, the exceedences would take place in the rainy season, mid- to late spring (March 1 through mid- or late April), while Crystal Springs lessingia grows most actively during May-August. Although information is not available about the growing season of Crystal Springs lessingia, it is very likely to be able to tolerate or re-colonize after a brief inundation. As a result, no mitigation is proposed for the acreage of Crystal Springs lessingia found in the exceedence zone above 287.8 feet elevation.

Crystal Springs lessingia occurs in the proposed Fountain Thistle Management Area, although the extent and quality of its habitat is limited to some degree by the presence of non-native species such as Monterey pine, jubata grass, yellow star thistle, and non-native grasses. Habitat management for serpentine bunchgrass, through invasive weed control and removal of non-native trees, would expand potential habitat for Crystal Springs lessingia and thus would compensate for potential losses as a result of the proposed project.

To ensure that the mitigation performance standard of no net loss of habitat functions and services is achieved, mitigation ratios of greater than 1:1 are sometimes required to compensate for factors such as uncertainty of mitigation success, differences between the habitat functions and services lost in the impacted area and those expected to be provided at the mitigation site, temporal losses or habitat functions in services, and the distance between the impacted area and the mitigation site. Taking these factors into consideration, mitigation proposed for the impacts of the proposed project on Crystal Springs lessingia and other rare plants, a 1:1 mitigation ratio is adequate to achieve the no net loss performance standard. First, the rare plant mitigation sites are in the same watershed in which the impacts would occur. The proximity of impacted sites and areas where the replacement functions would be developed and the continuity of land management provides a high probability that successful mitigation at the compensation sites is feasible and the management would be in perpetuity. This proximity also helps to preserve the genetic integrity and viability of future populations. Second, mitigation would either be fully completed prior to implementation of the proposed operations (see Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-103) or carried out in a stepwise manner, in advance of and in proportion to the impacts as they occur (see Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, above, under the heading *Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts*). This effectively makes the increase in water level contingent upon assured satisfaction of mitigation requirements. As such, there would be no temporal loss of habitat functions and services. Also, the master response

above, under the heading, *Success Criteria*, describes the process for determining whether functions and services have indeed been replaced and the subsection entitled *Rationale for Overlapping Mitigation* makes clear that for all special-status plant species, if the primary mitigation site is not capable of providing compensation habitat, then other areas on the watershed would be identified and utilized for this purpose.

For more information, please see the following subsections of Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation:

- Identification of a Mitigation Area for Special-status Plants and Serpentine Habitats
- Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats
- Primary Habitat Restoration and Enhancement Actions
- Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts
- Success Criteria
- Contingency Planning
- Rationale for Overlapping Mitigation
- Monitoring of Special-status Plants and Serpentine Habitats

Marin Western Flax

Comment B15, Marin Western Flax

The following comment is included under Comment B15:

- *Drew Shell, California Native Plant Society [O_CNPS2-09]*
- “– Marin dwarf flax (also referred to as Marin western flax) has very specific habitat requirements [and] is found at only three locations in San Mateo County. As a disjunct set of populations from those in the north bay, these San Mateo County populations are extremely important to the long term survival of the species. The largest of these three populations is the one in the Crystal Springs watershed, which is therefore extremely important to long term survival of this species on the peninsula. This watershed population would be impacted by project activities at the southern boat ramp staging area as well as by increased reservoir levels, and such impacts must be considered *highly* significant. Mitigation efforts should include not just attempts to establish new populations, but also enhancement of the *existing* habitat within the watershed that may be degraded by encroaching non-native plants such as *Lolium multiflorum* (Italian rye grass).” (*Drew Shell, California Native Plant Society [O_CNPS2-09]*)

Response

The Lead Agency acknowledges that Marin western flax is very rare and vulnerable to habitat loss from encroaching non-native species. Occupied habitat predicted to be affected is limited to an estimated 0.002 acres, or about 90 square feet. Within the proposed mitigation area and immediately adjacent to occupied habitat are areas of similar soil type and depth, exposure, and microhabitat, but these areas are covered by litter and duff accumulations from Monterey pines. It therefore appears that the presence

of Monterey pines, together with their accumulated litter and duff, are limiting the extent of suitable habitat for Marin western flax. The proposed mitigation would enhance this habitat, and the increased acreage would more than offset predicted project losses. The Lead Agency agree with the commenter that mitigation would and shall include enhancement of existing and degraded habitat. As discussed in Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, under the heading, *Establishing a Compensation Baseline, Special-status Plants*, the mitigation would include a determination of the baseline population within an enhancement area, and any increase above the baseline population would accrue toward satisfaction of success criteria for this species. For more detail on the mitigation for Marin western flax, please see the following subsections of Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, under the heading:

- Identification of a Mitigation Area for Special-status Plants and Serpentine Habitats
- Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats
- Primary Habitat Restoration and Enhancement Actions
- Rationale for Mitigation Actions
- Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts
- Establishing a Compensation Baseline, Special-status Plants
- Success Criteria

The commenter raised the point that Marin western flax is located within the Boat Ramp staging area and would be impacted there. Upon reviewing the special-status occurrence maps in Draft EIR Volume 3, Appendix I, page I-228), it is apparent that the special-status species present is Crystal Springs lessingia rather than Marin western flax. However, the point that a special-status plant is present and could be significantly impacted is valid. The Draft EIR (Volume 1, Chapter 5, page 5.13-73) states that Crystal Springs lessingia is found on both sides of the access road for the Boat Ramp staging area, on the upslope (eastern) side of the road within the staging area, and on the low hill and unvegetated shoreline west of the Boat Ramp. The Draft EIR finds that potential construction impacts on Crystal Springs lessingia are potentially significant. The Draft EIR proposes to implement Worker Training (Mitigation Measure M-BI-1a), Avoidance and restoration (MN-BI-1b), and Biological Monitor (M-BI-3c) as well as General Avoidance Measures (M-BI-3g) to minimize such impacts and compensate by site restoration, to reduce these impacts to less than significant.

Consistency with Watershed Management Plan

Comment B16, Consistency with the Watershed Management Plan

The following comments are included under Comment B16:

- Drew Shell, California Native Plant Society [O_CNPS2-12]
- Drew Shell, California Native Plant Society [O_CNPS2-22]
- Drew Shell, California Native Plant Society [O_CNPS2-24]

“2.7. Inconsistency with own management policies overlooked

Impact BI-10 discusses conflicts with local policies, but fails to discuss any of the many and serious conflicts of this project with SFPUC’s own Watershed Management Policies regarding the treatment of rare plants and plant communities on the watershed. Yet section 5.13.2.3 of the DEIR explicitly lists such policies and mentions that they are potentially relevant to the project.” (*Drew Shell, California Native Plant Society [O_CNPS2-12]*)

“3.10. No documented attempt to preserve genetic diversity

The SFPUC’s own Watershed Management Policies stress that the watershed shall be managed in a way that preserves and protects the full genetic diversity of rare plant species and plant communities on the watershed (policies V8, W1, W2, W4). However proposed mitigations do not define plans for preservation of the full genetic diversity across all segments of those populations expected to be impacted by the project. Mitigation which relies merely on numbers of plants or extent of habitat rather than preservation of full genetic diversity cannot be considered viable or adequate.” (*Drew Shell, California Native Plant Society [O_CNPS2-22]*)

“4.3. Watershed Management Policies stress preservation

A large number of SFPUC’s own Watershed Management Policies for the project area specifically indicate that emphasis should be placed on preserving and restoring existing populations of rare plant species and plant communities, as opposed to allowing their destruction and attempting to replace them elsewhere. This includes policies V5, V6, V7, V10, and V13. The proposed project therefore conflicts with SFPUC’s *own* policies, and this conflict must be considered significant. Given the repeated stressing in those policies of preserving and restoring existing habitat rather than creating new habitat, there is no justification for claims that proposed mitigations for rare plants and plant communities (which rely almost entirely on creating of new habitat) reduce this impact to less than significant.

Furthermore, per the SFPUC’s own policies, any habitat considered truly suitable for mitigation via restoration/creation of new plant populations should in fact already be targeted for such efforts as part of the implementation of those existing policies, regardless of any projects or impacts elsewhere in the watershed. Allowing such suitable restoration areas to be used to *offset* the destruction of known viable habitat elsewhere violates the management policies and in effect rewards SFPUC for not adequately implementing its own management policies in the first place. Such a situation cannot be considered as reducing the impacts of the project to less than significant since such efforts as proposed in the mitigations should in fact be part of the watershed management practices *anyway*.” (*Drew Shell, California Native Plant Society [O_CNPS2-24]*)

Response

The purpose of the SFPUC’s *Peninsula Watershed Management Plan* (WMP) is to provide a policy framework for the SFPUC to make decisions about the activities on watershed lands and to provide watershed management implementation guidelines. As stated on Draft EIR page 5.13-58 (Vol. 1, Chapter 5, Section 5.13), the WMP policies are intended to balance watershed and environmental policy concerns and should be addressed together, i.e., all policies operate in conjunction with one another to resolve potentially competing interests.

The WMP is thus a policy framework and is not intended to provide project-specific requirements for preserving or protecting resources. Nevertheless, as detailed in Section 5.13 of the EIR, all potential impacts on biological resources, including rare plants and plant communities, would be mitigated to less than significant with implementation of the identified mitigation measures. Therefore, with implementation of identified mitigation measures, the project would be consistent with the WMP policies designed to protect rare plants and plant communities. In response to the second comment, above, the SFPUC has proposed measures to preserve the genetic variability of fountain thistle and Marin western flax populations through seed collection as part of its mitigation program. For more detail, please see the following subsections of Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation:

- Success Criteria
- Contingency Planning
- Role of Transplanting, Seed Collection, and Salvage

Comment B17, Fountain Thistle Mitigation Concepts

The following comment is included under Comment B17:

- Drew Shell, California Native Plant Society [O_CNPS1-03]
- Tiffany Knight, Washington University in St. Louis [I_Knight-03]

“Nor do we agree that proposed mitigations are adequate, viable, or sufficient to reduce expected project impacts to less than significant levels. With such a large number of rare species being impacted, and so many truly critical populations being harmed or destroyed...”([Drew Shell, California Native Plant Society [O_CNPS1-03])

“The mitigation plan for *Cirsium fontinale* is vague and lacks proof of concept for many of the proposed activities.

I have four main concerns with the current plan:

- 1) Tree removal alone might be insufficient to create a habitat that will support a viable population of *Cirsium fontinale*.
- 2) Tree removal will create a disturbed habitat that might favor weedy annual plants that compete with the monocarpic perennial, *Cirsium fontinale*.
- 3) Transplantation might not work for *Cirsium fontinale*. There is no proof of concept that transplants will survive when moved from natural populations or greenhouse settings to the proposed mitigation site.
- 4) There is not a specific plan to evaluate the success of the mitigation (i.e., what will be measured), and how long the mitigated population will be monitored for. Because *Cirsium fontinale* takes on average 4 years to advance from the seedling to reproductive stage class, populations should be monitored for multiple generations for at least 10 years to ensure that a viable population has been created.

Below, I outline specific suggestions that would allow for better mitigation planning for *Cirsium fontinale* and better quantification of the success of the mitigation.

1) Evaluate the relationship between soil type and the density and fitness of *Cirsium fontinale*.

For the Crystal Springs population, establish several transects that capture the range of habitat types in which this *Cirsium fontinale* is found (serpentine, grassland, woodland), measure soil characteristics (macro nutrient levels, the Ca:Mg ratios, pH, moisture) and measure plant density, size and reproductive fitness of mature plants in the summer of 2010. This information can be used to quantify whether the species has higher fitness in the serpentine habitat compared to the other habitat types. I suggest that a similar analysis in all other locations of *Cirsium fontinale* in the same time frame, so that habitat associations and fitness are well established for this species. This will pinpoint the conditions that are necessary for viability of the species. This would be a relatively simple, inexpensive and short-term study that provides robust information that will help with mitigation site selection and preparation. This will help avoid failed mitigation that would occur if *Cirsium fontinale* seeds or transplants are placed in a site that corresponds to low fitness.

2) Survey locations in addition to the proposed woodland that might serve as appropriate mitigation sites.

Cirsium fontinale has a strong association with serpentine bunchgrass vegetation. In 2011, serpentine bunchgrass habitats that do not currently contain *Cirsium fontinale* could be identified and soil could be tested and compared to soil types that correspond to high fitness of *Cirsium fontinale*. With this information, ideal locations for seeds or transplants of *Cirsium fontinale* could be identified. This would also be a short-term and inexpensive survey to conduct that would provide robust information that would help with mitigation site selection and preparation.

3) Provide proof of concept for *Cirsium fontinale* transplantation.

We have found that *Cirsium fontinale* seeds are easy to germinate and plants grow rapidly in the greenhouse (Powell and Knight 2009). However, it is untested whether greenhouse-grown juvenile plants would thrive if transplanted into habitats for mitigation. It is possible that all the plants would die of transplant shock. Similarly, it is possible that plants moved from one site to another would also suffer high mortality due to transplant shock. Transplantation of plants may allow for rapid mitigation if these plants were able to survive, however, a pilot experiment with greenhouse-grown and wild transplants is necessary to establish proof of concept. Such an experiment could be short-term (monitor transplants for a few months) and inexpensive.

Citation: Powell, K.I. and T.M. Knight. 2009. Effects of nutrient addition and competition on biomass of five *Cirsium* species (Asteraceae) including a serpentine endemic. International Journal of Plant Sciences 170: 918–925.

4) Monitor fitness of all restored seeds or transplants for 10 years.

Based on our demography of two populations of *Cirsium fontinale* from 2006-2010, we find that plants take on average 4 years to grow from seedlings to reproductive individuals (Steve Kroiss and Tiffany Knight, unpublished data). Given the perennial nature of this plant, newly established populations should be monitored for 10 years. Demographic data, such as the survivorship of seedlings and juveniles, the seed production of mature plants, and the germination of seeds should be monitored *in situ*. With this data, population viability analyses can be conducted to examine the probability that a viable population has been created. While this would require a relatively long period of monitoring (10 years), I note that the amount of effort required in any individual year is low. We spend only 2 weeks per year per population to collect

very high quality demographic data that provides a good indicator of plant fitness and population dynamics.” (*Tiffany Knight, Washington University in St. Louis [I_Knight-03]*)

Response

The commenter has stated a concern that Monterey pine removal may not be sufficient to create the extent of suitable habitat adequate to compensate for impacts on fountain thistle and that the disturbance resulting from tree removal may create an environment more favorable to non-native invasive plants rather than fountain thistle. The Lead Agency acknowledges the complex nature of restoration outcomes, such as the response of groundwater and flow in surface seeps and springs in response to tree removal. The mitigation proposal therefore reflects a reasonable and careful approach to enhancing site conditions adjacent to and partially within a large and healthy extant population of fountain thistle. However, the SPFUC would be required under CEQA to diagnose problems and apply lessons learned to ensure future success, as discussed in the subsections of the master response listed below. The contingency actions are outlined as key components of the Mitigation and Monitoring Plans (MMPs) to be developed for special- status plants. The MMPs will stipulate site management actions, particularly directed toward removing vegetation that would compete with fountain thistle, such as jubata grass.

Comment I_Knight-03 also questions the efficacy of transplantation as a strategy for mitigating for impacts on fountain thistle and questions the absence of a plan to assess the success of the mitigation. Transplantation is not proposed as a primary component of the mitigation strategy for this species and would only be employed if the plants would otherwise be taken (see Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, under the heading, *Role of Transplanting, Seed Collection, and Salvage*). Rather, the mitigation strategy depends primarily on the restoration and enhancement of habitat through exotics removal, characterization of essential near-surface and surface hydrology conditions, and possible planting of associated plant species such as tufted hairgrass.

Comment I_Knight-03 goes on to provide specific suggestions for improving mitigation planning. These insightful suggestions are acknowledged and were considered in developing the success criteria for fountain thistle included in Mitigation Measure M-BI-8a, Listed and Nonlisted Special-status Plants, as revised in response to comments received on the Draft EIR. In addition, the commenter’s letter has been forwarded to the SFPUC staff responsible for planning and developing mitigation for fountain thistle. It should be noted that some of the commenter’s suggestions, such as studying soil chemistry and moisture, have been initiated by the SFPUC as part of an assessment of habitat features of the Fountain Thistle Management Area.

For more detail on overall monitoring and mitigation adequacy, please see the following subsections of Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation:

- Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats
- Rationale for Mitigation Actions
- Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts
- Success Criteria
- Contingency Planning

Comment B18, Impacts on Rare Natural Communities

The following comments are included under Comment B18:

- *Drew Shell, California Native Plant Society [O_CNPS1-02]*
- *Drew Shell, California Native Plant Society [O_CNPS1-03]*
- *Drew Shell, California Native Plant Society [O_CNPS2-01]*

“...[CNPS] do[es] not feel that the DEIR adequately reflects the scope and seriousness of possible impacts on rare native plant species and communities at the project site. Nor do we agree that proposed mitigations are adequate, viable, or sufficient to reduce expected project impacts to less than significant levels.” (*[Drew Shell, California Native Plant Society [O_CNPS1-02, -03]*)

“Therefore any loss of serpentine grassland, regardless of the presence of non native grasses, must be considered a significant and irreparable impact.” (*[Drew Shell, California Native Plant Society [O_CNPS2-01]*)

Response

Although the technical report (Draft EIR, Volume 3, Appendix I) did not specifically recognize the presence of serpentine bunchgrass within the project area, the impact analysis (Draft EIR Volume 1, Chapter 5, Section 5.13, pages 5.13-78 through -83) does recognize the presence of extensive areas of this sensitive natural community. The Draft EIR demonstrates a method for estimating the extent of serpentine bunchgrass based on soil type, and then analyzes the impacts on this community. As discussed in the text, this serpentine bunchgrass habitat is situated primarily along the eastern side of both Upper and Lower Crystal Springs Reservoirs. It concluded that the impacts on serpentine bunchgrass were significant, and then proposes mitigation measures to meaningfully restore areas of serpentine bunchgrass currently dominated by non-native trees, shrubs, herbs and grasses. Please see the response to Comment B3, above, *Serpentine Bunchgrass Not Adequately Mapped*.

The Draft EIR also recognizes oak woodland as a sensitive natural community. It analyzes impacts from both the increase in the maximum operating reservoir elevation to 287.8 feet, and from occasional exceedences when the reservoir elevation could rise to as much as 291.8 feet in elevation for brief periods. The exceedences are not expected to have a significant impact on serpentine bunchgrass, which currently grows down to the limits of the wave-cut shoreline, indicating that it tolerates any brief periods when reservoir elevations rise above the normal sustained elevations. By contrast, the literature clearly shows that large and long-lived upland species, and in particular oaks, are very susceptible to significant damage from even relatively brief periods of inundation, and that recovery

from such events may require years or even decades. The Draft EIR therefore concluded that a significant impact on oak woodland was probable in the lower two feet of the exceedence zone, where inundation events could occur frequently enough to affect this flood-sensitive resource. Please see Draft EIR Volume 3, Appendix J and Appendix M, pages M-9 and M-10 for a detailed discussion of this issue.

As noted by the commenter in O_CNPS2-01, serpentine bunchgrasses are continuously under assault from a broad array of threats, such as development, invasive species, climate change, and changes in soil chemistry associated with auto exhaust. The Draft EIR proposes mitigation measures consisting of restoration of serpentine bunchgrasses near Interstate 280, which do receive impacts from auto exhaust. The mitigation actions, such as weed removal and thatch removal, are intended to counter the effects caused by nitrogen enrichment, thus ensuring the survival and quality of the remaining serpentine bunchgrasses which might otherwise decline.

Fisheries

Comment B19, Fisheries Releases to San Mateo Creek

The following comments are included under Comment B19:

- William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-03]
- Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01]
- Richard Izmirian, California Sportfishing Protection Alliance [O_CASportFish1-01]
- Richard Izmirian, California Sportfishing Protection Alliance [O_CASportFish2-01]

“The text indicates that the Project will not substantially alter flows below Lower Crystal Springs Dam. Currently, flows below the dam are from valve leaks and seepage. As such, these flows are not designed to support downstream fisheries. We support establishing reservoir releases to support downstream fisheries based on a flow schedule developed using the best available science.” (William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-03])

“Dam Operations

The Lower Crystal Springs Dam Improvement Project will be built in conjunction with the Crystal Springs/San Andreas Transmission (CS/SA) project. Since the CS/SA project includes the infrastructure necessary for releasing water from Lower Crystal Springs Reservoir to San Mateo Creek, we have addressed most facility operations in a previous letter dated December 17, 2009 to the Crystal Springs/San Andreas Transmission Upgrade Project, SCH#2008022054.” [Note: Comments in the cited letter all relate to fishery releases.] (Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01])

“I grew up around and sometimes in San Mateo Creek. It was a wonderful place of discovery for a kid. It wasn’t until I was an adult, however, that I realized that the legendary giant trout that were said to have washed over the Crystal Springs Dam were really steelhead that migrated up San Mateo Creek from the ocean and they spawned.

Historical accounts speak of major steelhead runs up San Mateo Creek and into the watershed that is now behind Crystal Springs Dam.

The Draft Environmental Impact Report on the Crystal Springs Dam Improvement Project acknowledges that some steelhead continue to find their way up San Mateo Creek to spawn. That's good. The document also acknowledges their status under the Endangered Species Act as threatened. That's also correct and good.

The document indicates that scoping comments were submitted concerning evaluation of instream flows below the dam for steelhead protection. These scoping comments cited both the Endangered Species Act and 5937 of the California Fish and Game Code. This section of the Fish and Game Code requires that enough water be allowed to flow past the dam to keep fish in good condition downstream of the dam.

Now, in spite of the scoping comments on flows, the document ignores the issue of 5937 of the Fish and Game Code. The Endangered Species Act issue is answered by a statement that the existing seepage is the baseline condition, that flows will continue to be blocked, and therefore no impact exists.

We suggest you reevaluate what it means to comply with the Endangered Species Act and fully cooperate with the Section 7 consultation between the Army Corps of Engineers and the National Marine Fisheries Service. It must be determined what flows below Crystal Springs Dam are required to maintain the threatened Central California Coast steelhead in San Mateo Creek.

The San Francisco Public Utilities Commission has never been granted an exemption from either 5937 of the Fish and Game Code or from the Federal Endangered Species Act. The document should acknowledge these requirements and contain a full evaluation of the environmental needs of San Mateo Creek below Crystal Springs Dam. The evaluation must include determination of optimal flows for migration, spawning, and rearing of threatened Central California Coast steelhead. Study parameters must include temperature, dissolved oxygen, geomorphology, food supply, substrate composition, pool-riffle ratio, and riparian conditions." (*Richard Izmirian, California Sportfishing Protection Alliance [O_CASportFish1-01]*)

"The Draft Environmental Impact Report on the Lower Crystal Springs Dam Improvements Project acknowledges that some steelhead continue to find their way up San Mateo Creek to spawn. The document also acknowledges their status under the Endangered Species Act as "threatened".

The document indicates that scoping comments were submitted concerning evaluation of instream flows below the dam for steelhead protection. These scoping comments cited both the Endangered Species Act and 5937 of the California Fish and Game Code. This section of the Fish and Game Code requires that enough water be allowed to flow past a dam to keep fish in good condition downstream of the dam.

In spite of the scoping comments on flows, the document ignores the issue of 5937 of the Fish and Game Code. The Endangered Species Act issue is answered by a statement that the existing seepage is the baseline condition, that flows will continue to be blocked, and therefore no impact exists.

We suggest you re-evaluate what it means to comply with the Endangered Species Act, and fully cooperate with the Section 7 consultation between the Army Corp of Engineers and the National Marine Fisheries Service. It must be determined what flows below Lower Crystal Springs Dam are required to maintain the "threatened" central California coast steelhead in San Mateo Creek.

The SFPUC has never been granted an exemption from either 5937 of the Fish and Game Code or from the Federal Endangered Species Act. The document should acknowledge these requirements, and contain a full evaluation of the environmental needs of San Mateo Creek below Crystal Springs Dam. The evaluation must include determination of optimal flows for migration, spawning, and rearing of "threatened" central California Coast Steelhead. Study parameters must include temperature, dissolved oxygen, geomorphology, food supply, substrate composition, pool/riffle ratio, and riparian conditions." (*Richard Izmirian, California Sportfishing Protection Alliance [O_CASportFish2-01]*)

Response

The Draft EIR, pages 5.13-132 and 5.13-133 (Vol. 1 Chapter 5, Section 5.13.5), describes the existing conditions of fishery resources in lower San Mateo Creek, which currently supports both native and non-native fish species, including some reaches that support rainbow trout/steelhead. As described in Chapter 3 of this Comments and Responses document, the SFPUC has revised the project operations since publication of the Draft EIR as a result of the SFPUC's formal consultation process with the CDFG and NMFS associated with permitting requirements for Endangered Species Act compliance for the LCSDI and the CSSA Transmission Upgrade projects. Under the revised project operations, the SFPUC proposes to release water from Crystal Springs Reservoir to support fish and other aquatic life in San Mateo Creek consistent with a minimum water release schedule upon completion of dam improvements and associated piping being constructed under the CSSA project. The minimum water release schedule provides for year-round releases to lower San Mateo Creek immediately below the dam at rates ranging from of 3 to 17 cfs depending on the water year type and time of year. This project revision would result in a *beneficial* impact on fishery resources in lower San Mateo Creek, as described in the environmental analysis of the LCSDI Variant in Chapter 3 of this Comment and Responses document.

Draft EIR Section 5.13.2.1 (pages 5.13-50 and 5.13-51) describes federal regulations applicable to the project, including the Federal Endangered Species Act (FESA). As described in Draft EIR Section 5.13.5, Biological Resources – Fisheries, steelhead are assumed present in lower San Mateo Creek below the LCSD. Therefore, consultation with the NMFS under Section 7 of FESA is required to evaluate the potential impacts of the project on steelhead occurring in the project area. It is assumed that through the SFPUC's negotiations with CDFG and NMFS, the proposed minimum water release schedule has been determined to provide the seasonal flows needed to support fisheries and the necessary flows to keep steelhead in lower San Mateo Creek "in good condition" consistent with Section 7 of FESA.

This comment also refers to Fish and Game Code 5937, which requires: "The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the

absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam.” The revised project operations, which would include minimum water release requirements, address this issue.

References – Biological Resources

- California Natural Diversity Data Base (CNDDDB), Rarefind Electronic Inventory occurrences for San Mateo, Woodside, and Montara Mountain quadrangles. California Department of Fish and Game, Wildlife Data Branch. 2010.
- Federal Register. 1995. 50 CFR Part 17, Page 6671-6685. Endangered and threatened wildlife and plants; determination of endangered status for ten plants and threatened status for two plants from serpentine habitats in the San Francisco Bay Region of California. February 3, 1995 (Volume 60 Number 23).
- Foree, Sonya, SFPUC Peninsula Watershed biologist, email regarding known acreage of special-status plants on the Peninsula Watershed, dated July 1, 2010.
- King, D.M. and E.W. Price, *Developing Defensible Wetland Mitigation Ratios*. Prepared for Kathi Rodrigues NOAA, Office of Habitat Conservation, Habitat Protection Division. September 2004.
- Leitner, Barbara M., memorandum to file regarding the occurrence of special-status plant observations on the SFPUC Peninsula Watershed. July 30, 2010.
- The Nature Conservancy, Tamarisk Control in Southern California, 2001. Available online at <http://www.invasive.org/gist/stories/ca003.html>, accessed May 20, 2010.
- San Francisco Public Utilities Commission (SFPUC), *Lower Crystal Springs Dam Improvements Project, Biological Assessment for USFWS Consultation*, June 2010.
- U.S. Fish and Wildlife Service (USFWS), *Recovery Plan for Serpentine Soils of the San Francisco Bay Area*, 1998.
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, Soil Survey for Eastern San Mateo County, 1991.

4.18 Geology and Soils

The following comments and corresponding responses cover topics related to Chapter 5, Section 5.14, Geology and Soils, of the Draft EIR.

San Andreas Fault

Comment GS1, Earthquake Magnitude

The following comment is included under Comment GS1:

- Josh Cooperman [I_Cooperman1-05]

"I will like to note Peter Yanev, who is a structural engineer in the Bay Area, his article in the New York times of March 28th, I'd like to formally note that for this record, on Page 11 of the opinion section, whereby he states that, at least in the case of Seattle, we could be subject to a 9.0 earthquake and that we have to be prepared for it.

This dam is on the San Andreas Fault. You are increasing the water. And you are increasing the levels of water." (Josh Cooperman [I_Cooperman1-05])

Response

The article referred to by the commenter, "Shake, Rattle, Seattle" by Peter Yanev, appeared in the New York Times on March 28, 2010 and discusses the implications of the earthquake that occurred in Chile in February 2010 on building construction practices in the Pacific Northwest. The article states that the Pacific Northwest, not California, may be vulnerable to an earthquake like the one that occurred in Chile. The Cascadia Subduction Zone (also referred to as the Cascadia fault) is a very long sloping fault that stretches from mid-Vancouver Island to Northern California and is at the juncture of two plates; it is where the Juan de Fuca plate is being pushed under the North American plate (Yanev, 2010). Earthquakes that occur along subduction zones are the largest in the world, and as noted in the referenced article, can exceed a magnitude of 9.0. Seattle's buildings are designed for approximately half of the earthquake loads of buildings in California because earthquakes occur roughly half as often in Seattle as in California cities. The referenced article expresses concern regarding the adequacy of construction codes that are based on the *probability* of an earthquake striking a region rather than on the earthquake magnitude. However, as noted in the article, the magnitude of the expected earthquake along the Cascadia Subduction Zone is greater than earthquakes that have been experienced or are expected on the San Andreas fault. The article is referring to earthquake risks in the Pacific Northwest, not the San Francisco Bay Area, and the issues described in the article are not relevant to the proposed project.

As described on Draft EIR page 5.14-5 (Vol. 1, Chapter 5, Section 5.14), the proposed project is located in the vicinity of the San Andreas fault. The San Andreas fault is a strike-slip fault, formed where the Pacific plate and North American plate move laterally past each other. The California Geological Survey estimates that the maximum earthquake on the peninsula segment of the San Andreas fault would have a magnitude of 7.1 (CGS, 2002). An earthquake of this magnitude would result in much less groundshaking than a magnitude 9.0 earthquake because the magnitude scale is logarithmic, meaning that each increase of 1 results in a 10-fold increase in shaking amplitude. For example, an earthquake with a magnitude of 9.0 would have a shaking amplitude that is 10 times greater than an earthquake with a magnitude of 8.0, and a shaking amplitude that is 79 times greater than the estimated maximum earthquake on the peninsula segment of the San Andreas fault.

As stated on Draft EIR page 5.14-12 (Vol. 1, Chapter 5, Section 5.14), under the heading *Division of Safety of Dams*, the DSOD is responsible for regulating dam safety to protect people against loss of life and property from dam failure (Division 3 of the California

Water Code and Title 23, Division 2 of the California Code of Regulations). DSOD engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee their construction to ensure compliance with the approved plans and specifications. Geologic and seismic reviews include site geology, seismic setting, geologic/geotechnical site investigations, construction material evaluation, and seismic dam stability. In addition, DSOD engineers conduct annual inspections of existing dams under DSOD jurisdiction to ensure the dams are performing and being maintained in a safe manner. Because the proposed improvements to the LCSD would be designed to withstand groundshaking in accordance with DSOD seismic standards, subject to review and approval by the DSOD, impacts related to strong groundshaking as a result of an earthquake would be less than significant, as discussed in Impact GE-4, Seismically Induced Groundshaking (Draft EIR page 5.14-17). Please also refer to **Response G1** for additional discussion of seismic safety issues and to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, under the heading, *Dam Safety Under Existing Conditions*.

Geologic Hazards

Comment GS2, Geologic Hazard of Increased Reservoir Water Levels

The following comments are included under Comment GS2:

- *Josh Cooperman [I_Cooperman1-05]*
- *Joshua Cooperman [I_Cooperman2-01]*
- *Fan Moberg [I_Moberg-03]*

"I will like to note Peter Yanev, who is a structural engineer in the Bay Area, his article in the New York times of March 28th, I'd like to formally note that for this record, on Page 11 of the opinion section, whereby he states that, at least in the case of Seattle, we could be subject to a 9.0 earthquake and that we have to be prepared for it.

This dam is on the San Andreas Fault. You are increasing the water. And you are increasing the levels of water." (*Josh Cooperman [I_Cooperman1-05]*)

"1. The safety of the dam is the BIGGEST environmental issue respecting this EIR.

It is the big elephant in the room, which you prefer to ignore.

As the water level behind the dam will be increased by at least 4 foot following the upgrades, the integrity of the dam must be considered in great detail in this EIR, as the volume of water behind it will increase from the current levels, which could result in adverse environmental consequences. This EIR is deficient without such an analysis.

Yet, despite several thousand pages of reports and evaluations in the draft EIR, I have found only one sentence on page 3-7 which discusses this precise issue and you dismiss it as unworthy of further consideration, relying on evaluations by another agency, the State Division of Safety of Dams, with no citation or justification for your reasoning.

However, in discussing this with that State Division, they specifically indicated their most recent review was VERY limited in scope to a file review of the existing data, without further investigation. While the State in our conversation was not in a position to provide other observations or recommendations, it specifically did not imply that such review would not be beneficial or that other issues which the State did not observe under its limited circumstances might become apparent.

Indeed, the EIR concedes the last physical inspection with corings, etc. occurred in 1977, over 30 years and eons of technology ago. As even your managers concede that good foundations and good foundation contact is advisable, new corings should be performed to ensure that there has been no deterioration in the dam in the interim.

This should be again completed by an independent engineering group, and reviewed in a totally transparent manner with ALL the constituencies in Hillsborough, San Mateo, Burlingame, Millbrae and the County, to ensure that the safety of our community is not compromised, nor are shortcuts taken, as I believe may have occurred in a prior instance with the actions of the SFPUC." (Joshua Cooperman [I_Cooperman2-01])

"My children went to South School, and they had dam safety drills all the time to be sure to get the children to high ground.

I am not sure that I would feel comfortable with this type of approach to bringing in—making the dam higher. I don't understand this whole thing scientifically. But to bring the dam higher, making more water up against this old, old dam doesn't make a whole lot of sense to me. If that dam goes, my house—I'm right in the middle of it." (Fan Moberg [I_Moberg-03])

Response

Please refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsections *Dam Safety Under Existing Conditions* and *Dam Safety Under Proposed Project Conditions*.

Requests for Seismic Studies

Comments on the Draft EIR related to requests for additional seismic studies are discussed in Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically in the subsection *Dam Safety Under Existing Conditions*, which includes a summary of seismic safety studies and reports prepared by DSOD and others relevant to LCSD, and in Section 4.1.2, General Comments, under **Response G1**.

References – Geology and Soils

California Geological Survey (CGS), *Probabilistic Seismic Hazard Assessment for the State of California*, Appendix A: Fault Source Parameters, revised in 2002, from CDMG Open File-Report 96-08, available online at <http://www.consrv.ca.gov/CGS/rghm/psaha/ofr9608/>, 2002.

Yanev, Peter, "Shake, Rattle, Seattle," in the *New York Times*, March 28, 2010.

4.19 Hydrology and Water Quality

The following comments and corresponding responses cover topics related to Chapter 5, Section 5.15, Hydrology and Water Quality, of the Draft EIR. See also Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, in Section 4.1 of this Comments and Responses document for a comprehensive discussion of dam safety issues, including additional discussions of the PMF, flooding hazards, and overall risk of dam failure. **Table C&R 4.19-1** presents the responses and specific comments addressed in this section.

TABLE C&R 4.19-1
INDEX OF RESPONSES TO COMMENTS – HYDROLOGY AND WATER QUALITY

RESPONSE	A_CDFG-01	A_RWQCB-03	A_RWQCB-04	A_RWQCB-05	A_RWQCB-06	A_BAWSCA-02	A_Hillsb-04	A_Hillsb-05	A_HillsCSD-01	A_SFPC2-01	I_Bardet-01	I_Bardet-02	I_Bardet-03	I_Cooperman2-03	I_Moberg-01
Individual Comments and Responses															
H1, NPDES General Construction Permit			X												
H2, Beneficial Uses of Surface Water				X											
H3, Stormwater Pollution Prevention Plan (SWPPP)					X										
H4, Flows and Flooding along Lower San Mateo Creek During Ordinary Storms									X			X			
H5, Frequency of the 100-Year Flood Event										X					
H6, Dam Failure Inundation Mapping														X	
H7, Historical Releases Over the Spillway											X		X		X
H8, Fisheries Releases and the Proposed Project Variant	X	X													
H9, Reservoir Exceedances						X									
H10, Geomorphology							X								
H11, Downstream Sewer Pipes								X	X						

Water Quality

Comment H1, NPDES General Construction Permit

The following comment is included under Comment H1:

- William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-04]

“Page 5.15-14 of the DEIR includes a description of the requirements under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit;

Order No. 2009-0009-DWQ). The text indicates that to comply with the General Construction Permit, the contractor must implement best management practices (BMPs) and prepare a stormwater pollution prevention plan (SWPPP) that describes how the BMPs will be implemented. Please be aware that under the General Construction Permit, the discharger (i.e., the SFPUC) is also legally responsible for ensuring that a SWPPP is developed and BMPs are implemented. Therefore, the text needs to be revised to indicate that the SFPUC must ensure implementation of BMPs and development of an adequate SWPPP under the General Construction Permit.” (William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-04])

Response

The commenter’s suggested clarification is acknowledged. In response to this comment, the discussion of the Statewide General Permit for Stormwater Discharges Associated with Construction Activity on Draft EIR page 5.15-14, fourth full paragraph (Vol. 1, Chapter 5, Section 5.15) is revised to clarify the responsibilities of the SFPUC (as project sponsor) as follows:

The SWRCB has adopted a Statewide General Permit for Stormwater Discharges Associated with Construction Activity under the NPDES. The permit is applicable to construction sites of one acre or more. A general permit was adopted because the board determined that issuance of individual NPDES permits to construction sites was impractical. The permit also authorizes the discharge of water other than stormwater from the construction site, provided it does not cause or contribute to a violation of any water quality standard. For a construction project To be covered by the general permit, an individual the construction contractor must implement the best management practices (BMPs) specified in the general permit. The contractor must prepare a stormwater pollution prevention plan (SWPPP) that describes how the BMPs would be implemented at the construction site, both during construction and after construction is complete. The discharger (i.e., project sponsor) is legally responsible for ensuring that the construction contractor develops an adequate SWPPP and implements the specified BMPs.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Comment H2, Beneficial Uses of Surface Water

The following comment is included under Comment H2:

- William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-05]

“On page 5.15-15 of the DEIR, the text indicates that the existing beneficial uses of San Mateo Creek are freshwater replenishment, fish spawning, and rare and endangered species. Please note that the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) also lists wildlife habitat as an existing beneficial use of San Mateo Creek. Therefore, the DEIR should be revised to indicate that wildlife habitat is an existing beneficial use of San Mateo Creek.” (William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-05])

Response

The commenter correctly notes that wildlife habitat is an existing beneficial use of San Mateo Creek. In response to this comment, the discussion on Draft EIR page 5.15-15 (Vol. 1, Chapter 5, Section 5.15) is revised as follows:

The existing beneficial uses of San Mateo Creek are listed as: freshwater replenishment, fish spawning, wildlife habitat, and rare and endangered species. Potential beneficial uses of San Mateo Creek are listed as water-contact recreation, non-water-contact recreation, and cold freshwater fish habitat.

This revision does not change the analysis or conclusions presented in the Draft EIR.

Comment H3, Stormwater Pollution Prevention Plan (SWPPP)

The following comment is included under Comment H3:

- William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-06]

“On page 5.15-44 of the DEIR, the text indicates that should construction activities cause a visible turbidity plume, corrective action will be undertaken to reduce the turbidity in surface water measured 300 feet downstream to levels below Basin Plan criteria for cold water fish habitat beneficial uses. Please note that 300 feet downstream of the discharge is not an appropriate location for measuring compliance with water quality objectives for receiving waters. Compliance with water quality objectives for receiving waters should be based on measurements collected within 50 feet of the discharge. In addition, the Basin Plan water quality objective for turbidity is as follows.

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relating to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.

The DEIR should be revised to include turbidity monitoring within 50 feet of the discharge and list the water quality objective for turbidity.

The DEIR also indicates that sanitary facilities shall be placed a minimum of 300 feet away from San Mateo Creek. We appreciate inclusion of this BMP as a mitigation measure and recommend that the text be revised to also indicate that sanitary facilities shall be placed away from curbs and storm drains.” (William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-06])

Response

In response to this comment, Mitigation Measure M-HY-3 (Preparation and Implementation of a SWPPP) is revised to include the commenter’s recommended text revisions.

The second to last bullet under the heading *f. In-Stream – Construction BMPs* on Draft EIR page 5.15-44 (Vol. 1, Chapter 5, Section 5.15) and page 6-39 (Chapter 6, Section 6.15) is revised as follows:

- In the event that construction activities create a visible plume in surface waters, initiate monitoring of turbidity concentrations at the discharge site and ~~300~~50 feet downstream while the visible plume persists and initiate corrective action to reduce construction-related turbidity to be in accordance with turbidity criteria specified in the Basin Plan for coldwater fish habitat beneficial use, as measured in surface waters ~~300~~50 feet downstream of the working area. Corrective actions shall also be implemented as needed to ensure construction activities are within the Basin Plan's surface water quality objective for turbidity, which states that turbidity increases shall not be greater than 10 percent in areas where natural turbidity is greater than 50 Nephelometric Turbidity Units (NTU). Corrective actions would depend on the cause of the discharge of sediment and could include installation of additional silt fences and other erosion control devices, covering of stockpiled material and improvements to the system for treating water from the dewatering operation.

The second bullet under the heading *h. Waste Management and Hazardous Materials Pollution Control* on Draft EIR pages 5.15-44 and 6-40 is revised as follows:

- Locate sanitary facilities a minimum of ~~3~~200 feet from San Mateo Creek and away from curbs and storm drains

These revisions do not change the analysis or conclusions presented in the Draft EIR.

Flood Hazards

Comment H4, Flows and Flooding along Lower San Mateo Creek During Ordinary Storms

The following comments are included under Comment H4:

- *Anthony Ranii, Hillsborough City School District [A_HillsCSD-01]*
- *Joan Bardet [I_Bardet-02]*

"South School is located immediately adjacent to a small creek. Usually the flows in this creek are small. However, with increased capacity comes the possibility of larger scale releases of water from the reservoir. We request that this specific issue of large scale water releases and their effects on the creek be more specifically addressed in the EIR." (*Anthony Ranii, Hillsborough City School District [A_HillsCSD-01]*)

"I write to voice our concerns for those who live or work along the creek – concerns that may be impacted significantly by changing the height of reservoir water levels and by the increased volume and force of out-flows over the dam as they race downstream, snake by South School, tunnel under Mills Hospital and pass residential tracts on flat land on their way to the Bay." (*Joan Bardet [I_Bardet-02]*)

Response

As noted above in Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, the proposed project would reduce downstream flood hazards during the PMF because it would reduce the risk of dam failure in such a flood. The proposed project would have no effect or a beneficial effect on downstream flood hazard in other large storms similar to those experienced in the last 100 years for the reasons noted below.

Flooding can occur along lower San Mateo Creek under certain circumstances. Flooding is generally limited to the flatter reaches of the creek east of El Camino Real in San Mateo. The risk of flooding in the City of San Mateo is greatest when a high tide and a large storm occur at the same time. Tidal waters enter lower San Mateo Creek from San Francisco Bay and impede the drainage of runoff from the creek into the bay. Drainage of runoff may also be impeded by some of the bridges in the City of San Mateo. In the Town of Hillsborough, San Mateo Creek flows within a fairly deep channel with a slope that is steeper than in more downstream reaches. The Federal Emergency Management Agency's (FEMA) flood insurance rate map indicates that in the Town of Hillsborough, the 100-year return frequency flood is within the creek channel and does not overflow into surrounding areas (see **Figure C&R 3-2**).

Wet-weather flow along San Mateo Creek immediately below the LCSD consists primarily of storm water runoff from I-280. Wet-weather flow in the creek increases in a downstream direction as tributaries add water. Polhemus Creek, a major tributary, joins lower San Mateo Creek about 0.9 miles below the dam and adds water to it. Smaller tributaries and urban storm drains add wet-weather flow between the Polhemus Creek confluence and the San Francisco Bay.

The highest flows occur in the creek when the SFPUC makes a controlled release of water from Crystal Springs Reservoir or when an uncontrolled spill over the spillway at the LCSD occurs. Uncontrolled spills and controlled releases are rare because the current operating goals for Crystal Springs Reservoir are to keep the reservoir as full as possible without exceeding the maximum reservoir operating level, to avoid uncontrolled spills, and to minimize controlled releases. These goals were established to enable the SFPUC to capture as much water as possible from the San Mateo Creek watershed for use by its customers. No uncontrolled spills and three or four controlled releases have occurred in the last 25 years.

There are no long-term records of flow in lower San Mateo Creek because no gage was located along the creek until recently. The SFPUC has estimated flow in the creek at three locations when no releases or spills from Crystal Springs Reservoir are occurring using a hydrologic model. The highest flows that occurred in lower San Mateo Creek above the Polhemus Creek confluence, below the Polhemus Creek confluence and at San Francisco Bay in the 38-year period between 1960 and 1997 were estimated to be 40, 160 and 400 cfs, respectively.

The SFPUC can make controlled releases from Crystal Springs Reservoir at a maximum rate of 600 cfs. The rate of flow over the spillway at the LCSD during an uncontrolled spill depends on the size of the storm but would likely exceed 600 cfs. Controlled releases and uncontrolled spills are most likely to occur during very large storms when flow in lower San Mateo Creek would consist of the sum of the release or spill and storm runoff from the lower San Mateo Creek watershed. Thus, in the reach of lower San Mateo Creek that is not tidally-influenced, the highest risk of flooding, occurs when water is being released or spilled at Crystal Springs Reservoir.

As stated in the Draft EIR, the operating goals for Crystal Springs Reservoir with the proposed project would be the same as the current goals and therefore uncontrolled spills and controlled releases would be no more frequent or greater in size than they are under the existing condition. Because there would be no increase in frequency or size of releases or spills there would be no increase in flood hazard along lower San Mateo Creek as a result of the proposed project. In fact, there would be some decrease in flood hazard because the proposed project would make uncontrolled spills even less likely than they are under the existing condition. This is because Crystal Springs Reservoir, with the proposed project in place, would accommodate more storm runoff without spilling than is the case under the existing condition. Although flood control is not a stated purpose of Crystal Springs Reservoir, it is nevertheless one of its incidental benefits. Currently, the SFPUC lowers the water surface elevation in Crystal Springs Reservoir by several feet below its normal maximum water surface elevation at the beginning of the rainy season. Lowering the water surface elevation creates reservoir capacity to accommodate and capture runoff from most ordinary winter storms and avoids uncontrolled releases of water over the spillway at the LCSD. As a result, the flood hazard in areas bordering San Mateo Creek downstream of Crystal Springs Reservoir is less than it would be in the absence of the reservoir. The SFPUC would continue to lower the water surface elevation in Crystal Springs Reservoir at the beginning of the rainy season with the proposed project in place and consequently the incidental flood control benefits that the reservoir provides would also continue.

Hillsborough City School District's South School is located on El Cerrito Avenue near San Mateo Creek. A comment from the school district indicates that the South School is immediately adjacent to a small creek. This could be San Mateo Creek itself or a small tributary. Flooding along creeks tributary to San Mateo Creek, is usually a result of runoff from the tributary creek's own watershed, although in some cases it can be made worse by water backing up the tributary creek when flow is high in San Mateo Creek due to runoff and/or releases or spills from Crystal Springs Reservoir. Implementation of the proposed project would not affect runoff in the watersheds of tributary creeks, nor would it increase flow in San Mateo Creek during releases or spills and coincident storms, compared to existing conditions. Thus, the proposed project would not increase the flood hazard at South School during most large storms and would reduce flood hazard from uncontrolled spills at the LCSD. The proposed project would also decrease the flood hazard during the PMF and other very large storms without historical precedent because it would reduce the risk of damage to LCSD during such an event.

The commenters imply that, because the average water surface elevation in Crystal Springs Reservoir would be higher with the proposed project than under the existing condition, the volume of water released or spilled in floods would be greater. This is not the case. The volume of water released or spilled in floods depends on how much reservoir space the SFPUC's operators reserve to accommodate runoff from the reservoir's watershed. Under the existing condition, the SFPUC lowers the water surface elevation in Crystal Springs Reservoir to about 4 feet below the spillway crest elevation during the rainy season. This provides an approximately 2 billion gallons of reservation in the reservoir to accommodate runoff from large winter storms. In the future, with the proposed project, the SFPUC would lower the water surface elevation in the reservoir to about 8 feet below the spillway crest elevation in the rainy season. Because this would provide about twice the storage for runoff from very large storms as is currently provided, uncontrolled spills from the reservoir, and the flooding that might result from a spill, would be even rarer than they are under the existing condition.

Comment H5, Frequency of 100-Year Flood Event

The following comment is included under Comment H5:

- *Michael Antonini, San Francisco Planning Commission [A_SFPC2-01]*

"I did have a chance to see that dam. You know, 1890, with interlocking large concrete blocks. So I trust the addition will be every bit as sturdy as the original dam. I don't think we've seen the 100-year flood yet because it's been 120 years. So it may be coming eventually." (*Michael Antonini, San Francisco Planning Commission [A_SFPC2-01]*)

Response

The commenter's observation regarding the 100-year flood event is acknowledged.

Comment H6, Dam Failure Inundation Mapping

The following comment is included under Comment H6:

- *Joshua Cooperman [I_Cooperman2-03]*

"Indeed, the San Mateo County inundation maps show that wide areas of downtown San Mateo, extending to the Bay and Foster City, will be impacted by an adverse event to the dam, as well as the specific areas of Hillsborough where I reside. You can review these maps on the County's website. Affected institutions are South School, Crystal Springs Uplands School, Mills Hospital, the new San Mateo City Main Library, as well as the downtown San Mateo commercial and business area." (*Joshua Cooperman [I_Cooperman2-03]*)

Response

Dam inundation is discussed on Draft EIR page 5.15-9 (Vol. 1, Chapter 5, Section 5.15). The commenter's description of the inundation zone for the LCSD is consistent with the description provided in the Draft EIR. For additional discussion on risk of dam failure,

refer to Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, and specifically to the subsection, *Dam Safety Under Proposed Project Conditions*.

Reservoir Operations

Comment H7, Historical Releases Over the Spillway

The following comments are included under Comment H7:

- *Joan Bardet [I_Bardet-01]*
- *Joan Bardet [I_Bardet-03]*
- *Fan Moberg [I_Moberg-01]*

"...its beautiful lot along San Mateo Creek—one fed by run-off and by rare outflows from Crystal Springs reservoir." (*Joan Bardet [I_Bardet-01]*)

"In the early 70s, in a wet winter, water would cascade over the dam when reservoir levels rose well above normal. During our 4 years on El Cerrito Avenue we have experienced one purposed outflow from the dam. The neighborhood was warned beforehand to remove any furniture from creekside before the arrival of the water. During one particularly wet winter, the creek rose above private retaining walls, raising fears of flooding. Between these events there have been two severe droughts, the latest still threatening, and now we face some plausible effects of global warming and less snowfall and increases rainfall in the Sierra, leading to swollen rivers and reservoirs, and, in this case, for Crystal Springs dam, more frequent and greater outflows." (*Joan Bardet [I_Bardet-03]*)

"I've seen the San Mateo Creek rise and fall over the years. When we've had severe rainy weather seasons, my husband and friends have gone up to the top of the dam and have watched water coming over the top. At that point, we had to release more water because of the danger of the dam collapsing." (*Fan Moberg [I_Moberg-01]*)

Response

As discussed on Draft EIR page 3-13 (Vol. 1, Chapter 3, Section 3.4.3), water enters lower San Mateo Creek from Crystal Springs Reservoir in two ways: uncontrolled spills over the dam spillway and controlled releases using valves at the LCSD. Both uncontrolled spills and controlled releases are rare under the existing condition. No uncontrolled spills have occurred in the last 25 years, but spills probably occurred more frequently in earlier times. The SFPUC has made three or four controlled releases of water from Crystal Springs Reservoir in the last 25 years. The frequency and magnitude of controlled releases with the proposed project would be the same or similar to their current frequency and magnitude. The frequency and magnitude of uncontrolled spills with the proposed project would be less than under the existing condition (see **Response H4**).

Passage of water over the spillway does not indicate that there is a heightened risk of dam failure. The spillway on the top of the dam and the stilling basin at its toe are designed to enable water from large storms to pass over the dam without damaging it.

As discussed in Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety Issues, the existing spillway and stilling basin are too small to meet current standards set by the DSOD. The proposed project includes improvements to the spillway and stilling basin that would enable the LCSD to meet the current standards and to substantially improve the ability of the dam to accommodate large floods.

Under special circumstances in the past, the SFPUC has warned property owners that a large release from Crystal Springs Reservoir was imminent, and that the release could raise the water levels along lower San Mateo Creek. Such a circumstance could occur again in the future, but implementation of the proposed project would not increase the frequency or magnitude of either uncontrolled releases or uncontrolled spills.

Although there is disagreement among experts regarding the effect of climate change on the amount of precipitation that will fall in California in the future, there is agreement that more precipitation will be in the form of rain and less in the form of snow. This change could make flooding worse in watersheds that currently receive much of their precipitation as snow but in the future will receive more rain. Rain falling on accumulated snowpack often causes floods. The change would have little effect on watersheds like the San Mateo Creek watershed, which already receive almost all their precipitation as rain. Very rarely, small amounts of snow accumulate on the high ground in the San Mateo Creek watershed. Such events would likely be even rarer in the future.

Additional discussion of the effects of global climate change and the SFPUC's facility improvement projects included under the Water System Improvement Program (WSIP), of which the proposed project is a part, is presented in the WSIP Program EIR (PEIR) in Volume 7a, Chapter 14, Section 14.11 (San Francisco Planning Department, 2008). As described on Draft EIR page 2-9 (Vol. 1, Chapter 2, Section 2.3), the LCSDI EIR tiers from the WSIP PEIR and also incorporates by reference the environmental impact analyses of the WSIP PEIR, as applicable to the LCSDI project.

The comment also refers to observing the rise and fall of lower San Mateo Creek over the years. Please see **Response H4** for more information on the proposed project's effects on flooding along the creek.

Comment H8, Fisheries Releases and the Proposed Project Variant

The following comment is included under Comment H8:

- William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-03]
- Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01]

"The text indicates that the Project will not substantially alter flows below Lower Crystal Springs Dam. Currently, flows below the dam are from valve leaks and seepage. As such, these flows are not designed to support downstream fisheries. We support establishing reservoir releases to support downstream fisheries based on a flow schedule developed using the best available science." (William B. Hurley, San Francisco Bay Regional Water Quality Control Board [A_RWQCB-03])

"Dam Operations

The Lower Crystal Springs Dam Improvement Project will be built in conjunction with the Crystal Springs/San Andreas Transmission (CS/SA) project. Since the CS/SA project includes the infrastructure necessary for releasing water from Lower Crystal Springs Reservoir to San Mateo Creek, we have addressed most facility operations in a previous letter dated December 17, 2009 to the Crystal Springs/San Andreas Transmission Upgrade Project, SCH#2008022054." [Note: Comments in the cited letter all relate to fishery releases.] (*Charles Armor, California Department of Fish and Game – Bay Delta Region [A_CDFG-01]*)

Response

This comment in favor of establishing reservoir releases to support downstream fisheries is acknowledged. Subsequent to publication of the Draft EIR, as a result of the SFPUC's negotiations with the CDFG and NMFS, the SFPUC has prepared proposed revisions to the LCSDI operations that incorporate a minimum water release schedule to enhance habitat for native fish and other aquatic life in lower San Mateo Creek. The SFPUC proposes to continuously release water from Crystal Springs Reservoir at a rate of 3 to 17 cfs, depending on the water year type and the time of year. The proposed revisions to the LCSDI operations are referred to as the LCSDI Variant. Chapter 3, Project Variant, of this Comments and Responses document describes the LCSDI Variant and evaluates its environmental effects.

The fisheries releases proposed under the LCSDI Variant would have no effect on flooding along lower San Mateo Creek. As noted in **Response H4**, the greatest risk of flooding along the reach of San Mateo Creek that is not tidally-influenced occurs when the SFPUC makes a controlled release of water from Crystal Springs Reservoir or when an uncontrolled spill occurs over the dam spillway. The LCSDI Variant would have no effect on flooding potentially caused by controlled releases because the maximum controlled release with the LCSDI Variant would be 600 cfs, the same as it is under the existing condition. Under the existing condition, 600 cfs is released through several valves at the base of the LCSD. With the LCSDI Variant, 3 to 17 cfs would be released through a new low flow valve and the balance of the 600 cfs would be released through other valves.

With the LCSDI Variant, the fisheries release would add 3 to 17 cfs to flow in lower San Mateo Creek during uncontrolled spills over the dam. However, both the LCSDI Variant and the project as described in the Draft EIR would reduce the frequency and magnitude of uncontrolled spills (see **Response H4** for explanation). Thus, any increase in flow in the creek during uncontrolled spills attributable to the LCSDI Variant would be more than offset by the LCSDI Variant's effect on the frequency and magnitude of uncontrolled spills.

The LCSDI Variant including the fisheries releases would increase flow in lower San Mateo Creek by 3 to 17 cfs during storms that do not necessitate a controlled release from Crystal Springs Reservoir or cause an uncontrolled spill. The increase would not be expected to alter flood hazard along the creek because the flows at such times would be much lower than when a release or spill is occurring.

Comment H9, Reservoir Exceedances

The following comment is included under Comment H9:

- *Nicole Sandkulla, Bay Area Water Supply & Conservation Agency [A_BAWSCA-02]*

"2. Section 5.15.1.1 Surface Water Hydrology (pg. 5.15-7)

The text indicates that the stoplog system was employed 9 times over a 23-year period to manage expected runoff when large storms occurred over the watershed. **Section 5.15.3.5 Operational Impacts (pg. 5.15-34)** discusses the future expected frequency of operating at any water level above the planned 287.8-foot reservoir elevation over short durations as "about one year in three." This would imply a frequency of 7 or 8 excursions over a 23-year timeframe. Why does the frequency remain essentially the same as pre-project conditions even though the maximum normal operating level is four feet higher than before?" (*Nicole Sandkulla, Bay Area Water Supply & Conservation Agency [A_BAWSCA-02]*)

Response

Current operations associated with the existing stoplog system under DSOD-imposed operating restrictions are described on Draft EIR page 3-7 (Vol. 1, Chapter 3, Section 3.4.2). Future operations of Crystal Springs Reservoir with the proposed project are described on page 3-37 (Section 3.7.2).

Although the normal maximum water surface elevation under the DSOD-imposed restrictions on Crystal Springs Reservoir is 283.8 feet, the DSOD permits the SFPUC to temporarily raise the water surface by a few feet above the elevation of 283.8 feet to capture water from late spring storms. This is accomplished by placing stoplogs in the dam spillway. With the proposed project, the normal maximum water surface elevation in the reservoir would be 287.8 feet, and the SFPUC would continue the practice of temporarily raising the water surface elevation above its normal maximum value to capture water from spring storms. Stoplogs would not be needed to effect a raised water surface elevation because the spillway elevation after the proposed dam improvements would be 291.8 feet, 4 feet above the normal maximum water surface elevation. The water surface elevation would only rise to the spillway elevation in very large and infrequent storms.

The motivation for occasionally raising the water surface elevation above its normal maximum value under the existing condition is the same as it would be with the proposed project in place—to capture water from late spring storms. Because the temporary increases in surface water elevation are the result of hydrologic circumstances, the frequency of such increases in the future with the proposed project in place would be about the same as it is under the existing condition.

Geomorphology

Comment H10, Geomorphology

The following comment is included under Comment H10:

- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-04]*

"We also wish to note that this issue has been a concern to Town residents in the past due to erosion of the Creek banks from larger scale releases of water from the reservoir, as occurred in the past decade damaging the properties of residents with homes on the Creek. As this is a recurring problem, this must be more fully addressed and discussed in the EIR." (*Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-04]*)

Response

Project impacts on the geomorphology of San Mateo Creek are presented in Impact HY-9 on Draft EIR pages 5.15-41 and 5.15-42 (Vol. 1, Chapter 5, Section 5.15). The analysis presented in the Draft EIR concludes that the proposed project would have a less-than-significant impact on the geomorphology of lower San Mateo Creek. Additional information on the topic is provided below.

Channel form in streams and rivers is in dynamic balance with the pattern of streamflow. For millennia, streamflow in San Mateo Creek was unaffected by human activities. Beginning in the 1870s, water supply facilities were built in the San Mateo Creek watershed that greatly affected flow in the lower reaches of the creek. For more than 100 years, most of the runoff produced in the upper San Mateo Creek watershed was captured and used for water supply. Almost all of the time, flow in San Mateo Creek immediately downstream of the LCSD consisted of seepage under and around the dam and leakage from pipes and valves associated with the Crystal Springs Pump Station. Large flows only occurred when water spilled over the dam or was released through pipes at the toe of the dam. The channel form in the reaches of the creek that pass through the hills east and north of the LCSD has adjusted to the altered flow regime.

In the early 1970s, Interstate 280 was completed and stormwater runoff from the highway was directed into San Mateo Creek below the dam. As a result, flow in the reach of the creek below the dam was increased considerably during and immediately after storms. Again, the channel form of the creek adjusted to the altered flow regime.

The rapid rises in flow in the creek observable in Hillsborough usually result from highway drainage and runoff into the creek downstream of the dam during storms, rather than from the rare spills and releases of water from Crystal Springs Reservoir. There have been no uncontrolled spills over the dam, and only three or four releases through the pipes in the last 25 years. Thus, the creek bank erosion that has taken place in the last decade is more likely to be a consequence of stormwater drainage than of the rare releases from the dam.

Geomorphologists have concluded that the streamflows with the greatest effect on sediment movement and channel form in streams with sand or gravel beds usually have a recurrence interval of 1.3 to 1.7 years. Infrequent peak flows also influence channel form, but over time these peak flows move less sediment than intermediate flows. As described in the EIR, the proposed project could result in a slight increase in dry-weather flow in lower San Mateo Creek, but the change would be inconsequential for channel form and creek bank erosion. The proposed project would have no influence on the intermediate flows that play the dominant role in shaping the creek channel because the intermediate flows in lower San Mateo Creek result from stormwater discharges from Interstate 280 and tributary streams. Infrequent peak flows in lower San Mateo Creek would occur when the SFPUC made controlled releases of water through the valves at the LCSD or when uncontrolled spills occurred over the dam spillway. These large spills and releases from the LCSD after the proposed improvements have been completed would be no greater in volume or more frequent than under the existing condition. Consequently, the proposed project would not increase the rate of bank erosion in the Town of Hillsborough.

In the future, the SFPUC may make releases from Crystal Springs Reservoir to support fisheries in lower San Mateo Creek (see **Response H8** for more information). The releases would be too small to have a substantial effect on channel geomorphology.

Effects on Downstream Sewer Pipes

Comment H11, Downstream Sewer Pipes

The following comment is included under Comment H11:

- *Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-05]*
- *Anthony Ranii, Hillsborough City School District [A_HillsCSD-01]*

"The Town is also under a cease and desist order from regulatory agencies regarding wastewater discharges and volumes. The Town is also concerned about the enhanced flow volume's impact on the capacity of sewer pipes and potential overflows." (Cyrus Kianpour, Town of Hillsborough Department of Public Works [A_Hillsb-05])

We are also concerned as to what larger flows resulting from larger scale water releases would do to the pipes and water systems at all of our sites and request that this be more fully studied." *(Anthony Ranii, Hillsborough City School District [A_HillsCSD-01])*

Response

Inflow to the Town of Hillsborough's wastewater system consists of sanitary sewage from homes and businesses and stormwater that infiltrates or otherwise finds its way into the sanitary sewers. If portions of the Town of Hillsborough's collection system cross or parallel San Mateo Creek, it is possible that water from the creek infiltrates into the sewers and contributes to wet-weather overflows. If the proposed project resulted in increases in flow in San Mateo Creek, then infiltration into the sewers could increase.

However, this would only occur if the sewers are not watertight, as properly built and maintained sewers are. As noted in **Response H4**, the proposed project would not result in increases in flow in lower San Mateo Creek during storms and therefore could not increase infiltration into Hillsborough's sanitary sewer system during wet weather. The proposed LCSDI Variant, including fisheries releases, would not result in increases in flow in the creek during times when releases or spills are occurring at the LCSD but it would result in increases in flow in smaller storms when no release or spill occurs (see Chapter 3 and **Response H4** for more information). It would also result in increases in dry-weather flow. The increases in flow would be too small to substantially affect infiltration into sewers. Accordingly, the proposed project is not expected to have an adverse impact on the Town of Hillsborough's wastewater collection system.

Hillsborough City School District's South School is located close to San Mateo Creek and drains to it. The District's other schools are not located near the creek. Because the proposed project would not increase flow in San Mateo Creek in storms it would not affect storm water drainage or the integrity of the storm sewers, sanitary sewers or water pipes at the South School site.

References – Hydrology and Water Quality

San Francisco Public Utilities Commission (SFPUC), Engineering Management Bureau, *Lower Crystal Springs Dam PMP and PMF Studies*, December 28, 2008.

San Francisco Planning Department, *Final Program Environmental Impact Report for the San Francisco Public Utilities Commission's Water System Improvement Program*, File No. 2005.0159E, State Clearinghouse No. 2005092026. Certified October 2008.

4.20 Hazards and Hazardous Materials

No comments were received on topics related to Chapter 5, Section 5.16, Hazards and Hazardous Materials, of the Draft EIR.

4.21 Minerals and Energy Resources

No comments were received on topics related to Chapter 5, Section 5.17, Minerals and Energy Resources, of the Draft EIR.

4.22 Agricultural Resources

No comments were received on topics related to Chapter 5, Section 5.18, Agricultural Resources, of the Draft EIR.

4.23 Other CEQA Issues

No comments were received on topics related to Chapter 7, Other CEQA Issues, of the Draft EIR.

4.24 Alternatives

No comments were received on topics related to Chapter 8, Alternatives, of the Draft EIR.

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CHAPTER 5

Draft EIR Revisions

5.1 Introduction

The following changes to the Lower Crystal Springs Dam Improvements (LCSDI) project Draft Environmental Impact Report (EIR) are provided at the initiation of the San Francisco Planning Department to clarify content, to add additional information received after the release of the Draft EIR, or to correct content in the Draft EIR. In addition, some of these changes are made in response to comments received on the Draft EIR, as noted in Chapter 4, Comments and Responses. None of the text changes alter the impact conclusions presented in the Draft EIR; the changes do not result in new or more severe environmental impacts than those previously disclosed in the Draft EIR.

The revisions that follow incorporate both staff-initiated changes and changes in response to comments. This section presents changes by page number (or the first page number if there is more than one) that appear in the Draft EIR. In each change, new language is double underlined, while deleted text is shown in ~~strike-out~~.

5.2 Text Revisions

Revisions to Volume 1, Chapter 1, Summary

Page 1-19: The footnote under Table 1-1 is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

TABLE 1-1 (Revised)
SUMMARY OF LCSDI IMPACTS AND MITIGATION MEASURES

Section 5.8: Air Quality¹		
Impact AQ-1: Construction emissions of criteria pollutants.	PSM/SU	PSM/SU
<i>Mitigation Measures</i>		
M-AQ-1a: Dust Control Measures	X	X
M-AQ-1b: Exhaust Control Measures	X	X
M-AQ-1c: Additional Exhaust Control Measures	X	X
Impact AQ-2: Generation of diesel particulate matter (DPM) and toxic air contaminants (TACs) during construction.	LS/LS	LS/LS
<i>Mitigation Measures</i>		
None required.	--	--

TABLE 1-1 (Revised) (Continued)
SUMMARY OF LCSDI IMPACTS AND MITIGATION MEASURES

Section 5.8: Air Quality¹		
Impact AQ-3: Odors generated during project construction.	LS/LS	LS/LS
<i>Mitigation Measures</i>		
None required.	--	--
Impact AQ-4: GHG construction emissions and conflicts with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.	LS/LS	LS/LS
<i>Mitigation Measures</i>		
None required.	--	--
Impact AQ-5: Air pollutant and odor emissions during project operation.		
<i>Mitigation Measures</i>		
None required.		
¹ For all Air Quality impacts, two significance determinations are provided. The first determination is based on evaluation with the adopted 1999 BAAQMD guidelines and the second is based on evaluation with proposed 2009 the 2010 BAAQMD CEQA Air Quality Guidelines.		

Revisions to Volume 1, Chapter 2, Introduction and Background

Page 2-2: The following staff-initiated text revision is made to update the status of the SFPUC wholesale customers (i.e., Skyline County Water District is now part of California Water Service [CWS] – Bear Gulch). As shown in Section 5.3, Revised Draft EIR Figures, of this Comments and Responses document, Figure 2-3 on Draft EIR page 2-5 is also revised accordingly.

The SFPUC serves about one-third of its water supplies directly to retail customers, primarily in San Francisco, and about two-thirds of its water supplies to wholesale customers by contractual agreement. The wholesale customers are largely represented by the Bay Area Water Supply and Conservation Agency (BAWSCA), which consists of ~~27~~ 26 total customers, shown on **Figure 2-3**.¹ Some of these wholesale customers have other sources of water in addition to what they receive from the SFPUC regional water system, while others rely completely on the SFPUC for supply.

Revisions to Volume 1, Chapter 3, Project Description

Page 3-42: The description of DSOD approvals is revised in response to Comment PD14 to clarify the DSOD's role with respect to project construction and operations.

- **California Department of Water Resources, Division of Safety of Dams: The DSOD conducts a thorough review of plans and specifications to ensure the dam modifications meet all minimum requirements for dam safety prior to issuing a Dam**

Alteration Permit. After issuing the permit, the DSOD oversees construction activities to ensure the work is done in accordance with the approved plans and specifications. Following construction and during project operations, the DSOD would continue regulating the dam to ensure dam safety, including performing annual inspections and periodically reviewing the stability of the dam and its major appurtenances.

Revisions to Volume 1, Chapter 4, Plans and Policies

There are no text revisions to Chapter 4, Plans and Policies, of the Draft EIR.

Revisions to Volume 1, Chapter 5, Environmental Setting, Impacts, and Mitigation Measures

Section 5.1, Overview

Page 5.1-2: The following discussion of amendments to the CEQA Guidelines that were adopted subsequent to publication of the Draft EIR is added above the heading 5.1.2, *Significance Determinations*.

5.1.2 New Amendments to the CEQA Guidelines

Effective March 18, 2010, subsequent to the publication of the LCSDI Draft EIR, the Natural Resources Agency¹ adopted amendments to Appendix G of the CEQA Guidelines that were recommended by the Governor's Office of Planning and Research (OPR, 2010). Appendix G on the CEQA Guidelines contains sample questions that are commonly used by lead agencies, including the San Francisco Planning Department's Major Environmental Analysis division (MEA), as the thresholds of significance used to assess the severity of environmental impacts associated with a project, with some modifications. The amendments add or modify sample questions regarding agriculture and forest resources, transportation and circulation, and greenhouse gas (GHG) emissions. This section summarizes the amendments to the CEQA Guidelines, how these amendments affect the environmental impacts of the proposed project, and the corresponding staff-initiated text changes made to Sections 5.2 through 5.18 of this EIR as part of the updated information presented in the Comments and Responses document.

¹ The California Natural Resources Agency, comprised of 25 departments, commissions, conservancies, and boards, manages a wide variety of issues pertaining to water, fish and game, forestry, parks, energy, minerals, and coastal and marine life.

5.1.2.1 Agriculture and Forest Resources

The revised CEQA Guidelines augment the significance criteria for agricultural resources to include forest resources. The analysis of project impacts to agricultural resources in the EIR is presented in Section 5.18. This section, previously Section 5.18, Agricultural Resources, was renamed Section 5.18, Agriculture and Forest Resources, and the impact discussion amended to consider environmental impacts related to conflicts with zoning of forest or timber land, and loss or conversion of forest resources, as identified in the revised CEQA Guidelines.

Relationship to the Environmental Impacts of the Proposed Project

Section 5.18 is revised to address project impacts on forest resources. As discussed in that section, implementation and operation of the proposed project would not conflict with existing zoning, and would not require rezoning of forest land. Although the LCSDI project would result in the conversion of an estimated 31.1 acres up to a maximum of 50.2 acres of upland forest/woodland around the perimeter of the reservoir to lacustrine, wetland, grassland, and scrub vegetation (see Section 5.13, Biological Resources), the City and County of San Francisco (CCSF)-owned Peninsula watershed does not include any lands managed for forest or timber use and the affected acreage would remain and continue to be managed as habitat for fish and wildlife, albeit with changes in the habitat types. Therefore, the changes in habitat types together with the mitigation measures proposed for impacts on biological resources (see Section 6.13) are considered consistent with the designated resource uses for vegetation, fish and wildlife. Furthermore, per Public Resources Code 12220, forest resources include timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. By this definition the LCSDI project would not result in the conversion of forest land to non-forest use. Therefore, project impacts to forest resources were determined to be less than significant.

5.1.2.2 Greenhouse Gas Emissions

Appendix G of the revised CEQA Guidelines includes a new environmental resource topic for Greenhouse Gas Emissions. The sample questions for this resource topic consider the direct or indirect GHG emissions associated with a project, and a project's potential to conflict with applicable plans, policies, or regulations adopted for the purpose of reducing emissions of GHG.

Relationship to the Environmental Impacts of the Proposed Project

A detailed analysis of GHG, including consideration of the new checklist questions, was included in Draft EIR Section 5.8, Air Quality, using similar significance criteria previously developed by the San Francisco Planning Department on behalf of the CCSF. Thus, project impacts related to GHG emissions were adequately addressed in the Draft EIR and no further consideration of this topic was required in the Comments and Responses document.

5.1.2.3 Transportation and Circulation

The revised CEQA Guidelines amend the sample questions for this environmental resource topic to require consideration of applicable plans, ordinances, or policies that establish measures of effectiveness for the performance of the circulation system in the evaluation of transportation and traffic impacts. The amendments also consider a project's potential to conflict with congestion management programs and policies, plans, or programs pertaining to public transit, bicycle, or pedestrian facilities, as well as adverse effects on the performance or safety of such facilities.

Relationship to the Environmental Impacts of the Proposed Project

The impact analysis presented in Section 5.6, Transportation and Circulation, of the Draft EIR is consistent with the amended CEQA Guidelines related to traffic and transportation. Section 5.6 includes an evaluation of the proposed project's effects on LOS standards established by the San Mateo County Congestion Management Program during construction activities. (Long-term effects on LOS standards were not considered because as traffic associated with proposed operations and maintenance would be similar to existing conditions.) LOS standards are used to measure the ability of transportation infrastructure, such as highways and intersections, to function at or above the posted speed limit while providing all motorists complete mobility between lanes. Section 5.6 also analyzes potential impacts to popular bicycle routes during project construction activities, including adverse effects resulting from construction-related traffic congestion, temporary road closures, and impeded access. Increased traffic safety hazards for vehicles, bicyclists, and pedestrians during project construction activities are also evaluated. Impacts on public transportation systems were not considered because there is no regularly scheduled bus or other transit service on Skyline Boulevard or Crystal Springs Road in the project vicinity. In addition, implementation of the proposed project would not permanently change the existing or planned transportation network, and therefore would not conflict with policies, plans, or programs related to transit, bicycle, or pedestrian travel. Thus, project impacts related to traffic and transportation were adequately addressed in the Draft EIR and no further consideration of this topic was required in the Comments and Responses document.

Page 5.1-2: The following subheading is revised to accommodate text additions.

5.1.23 Significance Determinations

Page 5.1-3: The following subheading is revised to accommodate text additions.

5.1.34 Relationship to the WSIP

Page 5.1-5: The following subheading is revised to accommodate text additions.

5.1.45 Cumulative Impacts

Page 5.1-6: The following subheading is revised to accommodate text additions.

5.1.45.1 Approaches to Cumulative Impact Analysis

Page 5.1-9: The following subheading is revised to accommodate text additions.

5.1.45.2 Cumulative Projects in the Lower Crystal Springs Dam Vicinity

Page 5.1-15: The following subheading is revised to accommodate text additions.

5.1.45.3 Cumulative Projects in Proximity to Sampling Station #5

Page 5.1-17: The following subheading is revised to accommodate text additions.

5.1.45.4 Cumulative Projects in Proximity to Crystal Springs Reservoir

Page 5.1-29: The following subheading is revised to accommodate text additions.

5.1.56 References

Section 5.2, Land Use

There are no text revisions to Section 5.2, Land Use, of the Draft EIR.

Section 5.3, Aesthetics

There are no text revisions to Section 5.3, Aesthetics, of the Draft EIR.

Section 5.4, Population and Housing

There are no text revisions to Section 5.4, Population and Housing, of the Draft EIR.

Section 5.5, Cultural and Paleontological Resources

Page 5.5-20: Second significance criterion under Section 5.5.3.1, Significance Criteria, is revised to reflect updates to the San Francisco Planning Department's Initial Study Checklist.

- Cause a substantial adverse change in the significance of an ~~unique~~ archaeological resource pursuant to CEQA Guidelines Section 15064.5;

Page 5.5-27: Second paragraph of Mitigation Measure M-CP-1a is revised in response to Comment C3.

There will be three main tasks: gather data, prepare photographic documentation, and prepare a written historical and descriptive report. Photographic documentation shall include 4- by 5-inch negatives in labeled sleeves, 8- by 10-inch prints mounted on labeled photo cards, and an index to the photographs. Photographs shall be taken of the LCSD's character-defining features, including but not limited to the parapet wall, spillway, stilling basin, and abutments, as well as the historical setting of the dam. The research report shall include possible photographic reproduction of any valuable engineering blueprints original construction drawings, if available. If original construction drawings of the LCSD are not available, then the HAER report shall include measured drawings (HAER Level 1).

Page 5.5-27: Third paragraph of Mitigation Measure M-CP-1a is revised in response to Comment C1.

The SFPUC shall also develop interpretive panels for the LCSD. The panels shall include a history of the resource and some drawings or photographs depicting the unique design and history of the dam. The panels shall also include a brief history of Crystal Springs Valley prior to completion of the dam and reservoir. As appropriate, information about the relationship between the dam and OS-1 shall be included. The panels shall be displayed at publicly accessible areas adjacent to the dam. The objective of the interpretive panels is to increase local and regional public awareness of this resource as well as awareness of the SFPUC's efforts to educate citizens about the history of the regional water system.

Page 5.5-28: The following paragraph is inserted after the first full paragraph of Mitigation Measure M-CP-3 to correct an editorial error.

Should any indication of an archeological resource be encountered during any soils disturbing activity of the project, the project sponsor shall immediately notify the ERO and shall immediately suspend any soils disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken.

Page 5.5-33: The following reference is amended to reflect the revisions to the text of the report made in response to Comment C5.

ENTRIX/MSE JV, Final Historic Context, Architectural and Archaeological Resources Inventory Report for the Proposed Lower Crystal Springs Dam Improvement Project. Prepared for the San Francisco Public Utilities Commission, 2009-(as amended, 2010).

Section 5.6, Transportation and Circulation

Page 5.6-11: The first sentence under Impact TR-1 is revised to correct the duration of the Skyline Boulevard road closure associated with construction of the LCSDI project.

Impact TR-1: Temporary reduction in roadway capacity and increased traffic delays during construction.

Lower Crystal Springs Dam Vicinity

Project construction would require ~~a nine-month~~ closure of an approximately 1,300-foot segment of Skyline Boulevard between Crystal Springs Road and Bunker Hill Drive to all through-traffic for up to 14 months (see Figure 5.6-1).

Page 5.6-24: Under Mitigation Measure M-TR-1, the following text revisions are made to the first bullet in response to Comment R9.

- The SFPUC shall coordinate with San Mateo County on traffic and bicycle detours developed as part of the Crystal Springs Dam Bridge Replacement project to ensure that throughout construction of the LCSDI project, the detours remain accessible and safe for motorists and bicyclists and that adequate signage and notification of the detours are maintained. As part of the SFPUC's coordination with San Mateo County on the Traffic Control Plan, the SFPUC will work with San Mateo County to periodically monitor and maintain accessibility and safety conditions for bicycle and pedestrian traffic along bicycle detours.

Page 5.6-25: Under Mitigation Measure M-TR-1, the following stipulation is added as the last bullet in response to Comment R10.

- A truck driver education program shall be developed and implemented to inform truck drivers of the increased safety hazards to cyclists and recreational users associated with the movement construction vehicles along popular bicycle routes in the project vicinity, and to reinforce driving practices that promote driver awareness and road safety for all users.

Section 5.7, Noise and Vibration

There are no text revisions to Section 5.7, Noise and Vibration, of the Draft EIR.

Section 5.8, Air Quality

Page 5.8-7: The source reference for Table 5.8-2 is revised due to changes in the cited references as a result of the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

TABLE 5.8-2 (Revised)
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

SOURCE: BAAQMD, 2010a.

Page 5.8-11: The following text revisions are made to the first paragraph reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

~~The BAAQMD is currently in the process of recently updated their 1999 CEQA Air Quality Guidelines (BAAQMD, 1999) by adopting new CEQA Air Quality Guidelines, which include quantitative CEQA significance thresholds for construction-related and operational emissions of criteria pollutants, precursors, and health risks (toxic air contaminants, (TACs) , and GHGs (BAAQMD, 2010b09). According to the BAAQMD, these recently adopted thresholds of significance are only intended to apply to environmental analyses that began on or after June 2, 2010 and thresholds pertaining to the health risks to sensitive receptors are only intended to apply to environmental analyses for new sensitive receptors that began on or after January 1, 2011. Even though the environmental analysis of the proposed project began well in advance of June 2, 2010, the analysis in this EIR conservatively relies on the recently adopted (BAAQMD, 2010b) assessment methodologies, significance thresholds, and mitigation strategies. The BAAQMD has not yet adopted these guidelines or quantitative significance thresholds for construction-related emissions, although the BAAQMD expects to adopt these new guidelines in 2010.~~

Page 5.8-13: The following text is inserted before the first paragraph and the first sentence of the second paragraph is revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Bay Area Air Quality Management District-Climate Protection Program

The BAAQMD recently updated their 1999 CEQA Air Quality Guidelines (BAAQMD, 1999) by adopting new CEQA Air Quality Guidelines, which include quantitative CEQA significance thresholds for construction-related and operational emissions of GHGs (BAAQMD, 2010b). According to the BAAQMD, these recently adopted thresholds of significance are only intended to apply to environmental analyses that began on or after June 2, 2010.

The BAAQMD also established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the Bay Area Air Basin.

Pages 5.8-16 through 5.8-19: The following paragraphs are revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

5.8.3.2 Approach to Analysis

The air quality impact analysis considers construction and operational impacts associated with the LCSDI project. Construction-related impacts would occur primarily within a

9-month period when substantial completion of project-related construction activities would occur, while operational impacts would occur over many years after construction has been completed. While the BAAQMD adopted new thresholds of significance in June 2010, according to the BAAQMD, these new thresholds are only intended to apply to environmental analyses that began on or after June 2, 2010 and thresholds pertaining to the health risks to sensitive receptors are only intended to apply to environmental analyses for new receptors that began on or after January 1, 2011. Even though the environmental analysis of the proposed project began well in advance of June 2, 2010, the analysis in this EIR evaluates ~~C~~construction air emissions are ~~evaluated~~ in accordance with both the ~~1999adopted~~ BAAQMD guidelines for assessing and mitigating air quality impacts (BAAQMD, 1999), in addition to the assessment methodologies, significance thresholds, and mitigation strategies outlined in but this analysis also includes an evaluation of the project's ~~construction-related emissions based on the 2010proposed~~ BAAQMD CEQA Air Quality Guidelines (BAAQMD, ~~2010b2009~~). Similarly, operational impacts on air quality are evaluated in accordance with both the ~~1999adopted~~ and ~~2010proposed~~ BAAQMD guidelines. The approach to analysis of the various categories of air pollutants is described below.

~~The BAAQMD's proposed guidelines, however, have not been adopted and are subject to ongoing review and comment. Consequently, the proposed guidelines may not be adopted in their current form. Nevertheless, in anticipation of the potential for new guidelines, this EIR analyzes potential air quality impacts under both current and proposed guidelines. Until and unless new guidelines are adopted, the current CEQA guidelines provide the basis for significance determinations in this EIR. To be conservative, however, the EIR describes potentially significant impacts and corresponding mitigation measures to be implemented if the BAAQMD adopts the proposed guidelines or other substantially similar regulations.~~

Criteria Pollutants

Under the 1999adopted guidelines, the BAAQMD does not require quantification of construction-related fugitive dust emissions, but provides guidance for quantification and considers the significance of a project's impact based on the extent of control measures that are proposed to be implemented. For example, if appropriate mitigation measures are implemented for each project to control fugitive dust emissions, the BAAQMD considers potentially significant project-related and potentially significant contributions to cumulative impacts to be less than significant.

~~The adopted-1999~~ guidelines similarly consider temporary construction equipment exhaust emissions to have been included in the regional emissions "budget" for on- and off-road sources. By virtue of this inclusion, the CEQA Guidelines consider these emissions to not be "new" to the air basin. Therefore, the construction-related emissions from the project would not prevent attainment or maintenance of the CO and ozone standards within the Bay Area. If measures are implemented to maintain construction equipment in good working order,

the BAAQMD considers potentially significant project-related and potentially significant contributions to cumulative regional exhaust emissions impacts to be less than significant.

As indicated above (under Section 5.8.2, Regulatory Framework), the BAAQMD ~~recently has not~~ adopted quantitative thresholds of significance for construction-related emissions ~~at this time~~. However, in 2009, the BAAQMD began the process of preparing new CEQA Air Quality Guidelines as well as quantitative CEQA significance thresholds for construction-related emissions of criteria pollutants (BAAQMD, 2009). The BAAQMD expects to adopt these (or similar) new guidelines and thresholds of significance in 2010. Therefore, in anticipation of the BAAQMD's expected adoption of new guidelines and quantitative significance thresholds for construction-related emissions, Although these thresholds are not considered by the BAAQMD to apply to this project because the environmental analysis of this project began prior to June 2, 2010, this EIR also includes a quantitative analysis of the project's construction-related emissions based on the ~~2010proposed~~ BAAQMD CEQA Air Quality Guidelines (which include qualitative and quantitative significance thresholds) using worst-case assumptions for the project's construction emissions. The ~~2010proposed~~ guidelines ~~do would~~ not change the BAAQMD's ~~1999current~~ guidelines for fugitive dust. However, under the ~~2010proposed~~ BAAQMD thresholds of significance for criteria pollutants, the proposed project would result in a significant impact if construction-related emissions were to exceed the following thresholds: more than 54 pounds per day of ROG or NO_x, 54 pounds per day of PM_{2.5} (exhaust emissions only), or 82 pounds per day of PM₁₀ (exhaust emissions only).

The ~~1999adopted~~ and ~~2010proposed~~ BAAQMD guidelines also provide significance thresholds for criteria pollutant emissions associated with project operation. However, operation of the water storage facilities associated with the LCSDI project would not directly generate criteria air pollutants, and indirect criteria pollutant emissions associated with operation of project facilities would not change with the LCSDI project. Therefore, air pollutant emissions associated with project operation are discussed qualitatively.

Toxic Air Contaminants

The ~~2010proposed~~ guidelines do not change the BAAQMD's ~~1999current~~ threshold for TACs. The BAAQMD TACs threshold is an increased cancer risk of more than 10 in 1 million for a person with maximum exposure potential and increased non-cancer risk of 1.0 Hazard Index (chronic or acute). However, the ~~2010proposed~~ guidelines also apply these thresholds to construction emissions, whereas these thresholds under the ~~1999current~~ guidelines apply only to operational emissions. In addition, the 2010proposed guidelines would add the following additional criterion to both construction-related and operational emissions: increase in annual average ambient PM_{2.5} of more than 0.3 µg/m³. The ~~2010proposed~~ guidelines would also change the analysis of cumulative TAC emissions, as further described below under Section 5.8.3.7, Cumulative Impacts.

Greenhouse Gases

On December 30, 2009, the State of California Natural Resources Agency adopted amendments to the CEQA guidelines that address GHG emissions and become effective in March 2010. The adopted amendments provide a basic framework for assessing GHG impacts, but do not establish numerical significance thresholds for GHG emissions. Adopted guidelines add the following criteria: (1) generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or (2) conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. These two criteria are included under the significance criteria in Section 5.8.3.1, above, and impacts of the proposed project with respect to these criteria are evaluated under Impacts AQ-4 and AQ-6 below.

For GHG emissions during project construction and operation, ~~no the state or regional air quality agency~~ has not adopted a methodology or quantitative threshold (analogous to those for criteria pollutants) that can be applied to a specific development or construction project to evaluate the significance of its contribution to these emissions. ~~At this time, the proposed~~ However, the BAAQMD's recently adopted 2010 CEQA Guidelines contain a thresholds of significance ~~include a GHG threshold~~ for operational GHG emissions but none for construction (BAAQMD, 2010b2009).

The ~~2010 proposed~~ BAAQMD guidelines recommend quantification and disclosure of GHG emissions that would occur during construction and determination on the significance of these construction-generated GHG emission impacts in relation to meeting the state's GHG reduction goals, a case-by-case consideration of construction GHG emissions and encourage project applicants to implement construction GHG reduction strategies where feasible. The BAAQMD has also indicated that it plans to develop a list of best management practices, such as alternative fuels, use of local materials, and recycling of construction and demolition waste, to provide lead agencies with strategies that reduce greenhouse gas emissions from construction The BAAQMD also encourages incorporation of best management practices to reduce GHG emissions during construction, such as using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet, using local building materials of at least 10 percent, and recycling or reusing at least 50 percent of construction waste or demolition materials (BAAQMD, 2010b2009). The impact analysis in this section calculates the quantity of GHGs that would be emitted during project construction and operation, and then compares construction emissions to total GHG emissions in the Bay Area and in California; operational emissions are compared to ~~2010 proposed~~ BAAQMD significance thresholds as appropriate. It also addresses steps that the State intends to take to reduce GHG emissions and the actions that the SFPUC is actively taking to reduce GHG emissions so that implementation of the Water System Improvement Program (WSIP) and its component facility improvement projects would not conflict with the state's goals of reducing GHG emissions to 1990 levels by 2020.

Page 5.8-19: The note at the bottom of Table 5.8-3 is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

TABLE 5.8-3 (Revised)
SUMMARY OF IMPACTS – AIR QUALITY

Impact	Significance Determination*	
	LCSD Site	Sampling Station Site
Impact AQ-1: Construction emissions of criteria pollutants.	PSM/SU	
Impact AQ-2: Generation of diesel particulate matter (DPM) and toxic air contaminants (TACs) during construction.	LS/LS	LS/LS
Impact AQ-3: Odors generated during project construction.	LS/LS	LS/LS
Impact AQ-4: GHG construction emissions and conflicts with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.	LS/LS	LS/LS
Impact AQ-5: Air pollutant and odor during project operation.	LS/LS	LS/LS
Impact AQ-6: GHG operational emissions and conflicts with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.	LS/LS	N/A
Impact C-AQ: Cumulative emissions of criteria pollutants, toxic air contaminants, and greenhouse gas emissions.	LS/SU	

B = Beneficial impact

N/A = Not Applicable or no impact

LS = Less than Significant impact, no mitigation required

SM = Significant impact, can be Mitigated to less than significant

PSM = Potentially Significant impact, can be Mitigated to less than significant

SU = Significant Unavoidable impact

PSU = Potentially Significant Unavoidable impact

* Significance Determination under ~~adopted 1999~~ BAAQMD CEQA Guidelines / Significance Determination under ~~proposed 2009~~ 2010 BAAQMD CEQA Guidelines

Page 5.8-20: The following text is revised reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Dust Emissions

Evaluation with ~~1999~~ Adopted BAAQMD Guidelines. Under the BAAQMD's ~~adopted 1999~~ CEQA Guidelines (1999), the BAAQMD does not require quantification of construction-related fugitive dust emissions but considers dust emissions to be *potentially significant* but mitigated to a less-than-significant level with implementation of applicable BAAQMD-recommended dust control measures presented in Mitigation Measure M-AQ-1a (Dust Control Measures).

Evaluation with ~~2010~~Proposed BAAQMD Guidelines. Under the ~~2010~~proposed BAAQMD CEQA Guidelines, there are no quantitative thresholds for fugitive dust. However, the BAAQMD recommends that all construction-related emissions be quantified using the URBEMIS model, and the model output estimates all criteria pollutant emissions including fugitive dust (see **Table 5.8-4**). Similar to the ~~1999~~adopted guidelines, dust emissions would be *potentially significant* but mitigated to a less-than-significant level under the ~~2010~~proposed guidelines with implementation of the control measures to reduce fugitive dust presented in Mitigation Measure M-AQ-1a (Dust Control Measures). However, the 2010 guidelines also include additional mitigation measures for projects with construction emissions that exceed the threshold. However, since both project-related fugitive and exhaust PM₁₀ daily emissions (presented in Table 5.8-4) would not exceed the 2010 threshold for PM₁₀, these additional mitigation measures would not be required.

Under both ~~1999~~adopted and ~~2010~~proposed guidelines, the BAAQMD considers construction-related fugitive dust emissions to be mitigated to a less-than-significant level if BAAQMD-recommended dust controls are implemented. These controls are included in Mitigation Measure M-AQ-1a. Therefore, the project's fugitive dust emissions impact would be reduced to a less-than-significant level under both ~~1999~~adopted and ~~2010~~proposed BAAQMD significance thresholds with implementation of Mitigation Measure M-AQ-1a.

Equipment Exhaust Emissions

Evaluation with ~~1999~~Adopted BAAQMD Guidelines. Operation of construction equipment and vehicles (i.e., heavy equipment and delivery/haul trucks, worker commute vehicles, air compressors, and generators) would generate criteria pollutants (CO and ozone precursors). Volatile organic compounds (VOCs) and NO_x from these emission sources, both ozone precursors, would incrementally add to regional increases in ozone during project construction. The ~~1999~~adopted BAAQMD CEQA Guidelines recognize that construction equipment emits ozone precursors but indicate that such emissions are included in the emissions inventory that is the basis for regional air quality plans, and that construction emissions are not expected to impede the attainment or maintenance of ozone standards in the Bay Area (BAAQMD, 1999). Therefore, under the BAAQMD's ~~1999~~adopted CEQA Guidelines ~~(1999)~~, the project's equipment exhaust emissions are considered *potentially significant*, but mitigated to a less-than-significant level with implementation of the BAAQMD-recommended exhaust control measures presented in Mitigation Measure M-AQ-1b (Exhaust Control Measures).

Page 5.8-21: Table 5.8-4 is revised on the following page to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

TABLE 5.8-4

**AIR POLLUTANT EMISSIONS FROM CONSTRUCTION ACTIVITIES AT THE LCS D VICINITY
AND COMPARISON TO PROPOSED 2010 BAAQMD SIGNIFICANCE THRESHOLDS (pounds per day)**

Project Construction Stage	# of Days	ROG	NO _x	CO	SO ₂	PM ₁₀ ^a	PM _{2.5} ^a	CO ₂
Without Mitigation								
Stilling Basin – Excavation Soil Nail Shoring	54	804.6	7932.6	3326.4	0	464.4	329.4	1,018,375.2
Stilling Basin – Rock Anchors	24	213.6	2244	876	0	146.4	91.2	295,564.8
Stilling Basin – Concrete Placement, Slab and Walls	76	638.4	7045.2	2629.6	0	471.2	288.8	861,954.0
Toe of Dam – Lower Trailing Walls, Chute Blocks	22	184.8	2039.4	761.2	0	136.4	83.6	249,513.0
Top of Dam – Demolish Parapet Wall	40	112	800	524	0	156	72	81,852.0
Top of Dam – Core Drill/Place/Grout Anchors in Parapet, Ogee, and Bridge	55	522.5	5522	2057	0	346.5	220	708,851.0
Top of Dam – Concrete in Parapet Walls and Bridge Piers	37	44.4	321.09	185	0	114.7	40.7	36,604.0
Top of Dam – Forms and Concrete Placement for Ogee Weir	43	86	718.1	378.4	0	150.5	60.2	82,151.5
Stilling Basin Metal Railings and Riprap	15	67.5	723	286.5	0	66	34.5	86,031.0
Sampling Station #5 – Fine Grading	40	2.0	15.4	9.0	0.0	3.4	1.3	1,449.9
Sampling Station #5 – Construction	40	3.0	16.5	13.0	0.0	1.2	1.1	1,884.8
Total Pounds		2,678.8	27,377.3	11,046.1	0	2056.7	1222.8	3,424,231.2
Average Pounds Per Day (168 days)		15.9	163.0	65.8	0.0	12.2	7.3	-
With Implementation of Mitigation Measure M-AQ-1b, BAAQMD Exhaust Controls								
Stilling Basin – Excavation Soil Nail Shoring	54	804.6	6825.6	3326.4	0	81	64.8	1,018,375.2
Stilling Basin – Rock Anchors	24	213.6	1908	876	0	19.2	14.4	295,564.8
Stilling Basin – Concrete Placement, Slab and Walls	76	638.4	6163.6	2629.6	0	98.8	76	861,954.0
Toe of Dam – Lower Trailing Walls, Chute Blocks	22	184.8	1784.2	761.2	0	28.6	22	249,513.0
Top of Dam – Demolish Parapet Wall	40	112	684	524	0	16	8	81,852.0
Top of Dam – Core Drill/Place/Grout Anchors in Parapet, Ogee, Bridge	55	522.5	4697	2057	0	44	33	708,851.0
Top of Dam – Concrete in Parapet Walls and Bridge Piers	37	44.4	288.6	185	0	14.8	7.4	36,604.0
Top of Dam – Forms and Concrete Placement for Ogee Weir	43	86	627.8	378.4	0	21.5	12.9	82,151.5
Stilling Basin Metal Railings and Riprap	15	67.5	627	286.5	0	10.5	7.5	86,031.0
Sampling Station #5 – Fine Grading	40	2.0	13.3	9.0	0.0	0.5	0.2	1,449.9
Sampling Station #5 – Construction	40	3.0	14.4	13.0	0.0	0.2	0.2	1,884.8
Total Pounds		2,678.8	23,633.5	11,046.1	0	335.1	246.4	3,424,231.7
Average Pounds Per Day (168 days)		15.9	140.7	65.8	0.0	2.0	1.5	-
Proposed 2010 BAAQMD Significance Thresholds, pounds per day (BAAQMD, 2010b-2009)		54	54	-	-	82	54	-

NOTE: Boldface type indicates emissions would exceed the applicable significance threshold. Estimated emissions include fugitive dust and equipment exhaust emissions generated by on-site construction activities as well as exhaust emissions from off-site truck operations.

^a Fugitive emissions plus equipment exhaust

SOURCE: Orion, 2010 (based on URBEMIS2007 Model, Output in Appendix G)

Page 5.8-22: The first paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Evaluation with ~~2010 Proposed~~ BAAQMD Guidelines. ~~Due to the expected adoption of the proposed BAAQMD CEQA Guidelines in some form in early 2010 (which, as currently drafted, include new quantitative significance thresholds for construction-related emissions),~~ This EIR includes a quantitative analysis of the project's construction emissions, as specified in the 2010 BAAQMD Guidelines, to determine the project's consistency with ~~2010 proposed~~ thresholds. In accordance with the ~~2010 proposed~~ BAAQMD CEQA Guidelines, the CARB computer model, URBEMIS2007, was used to calculate exhaust emissions associated with each construction phase (model outputs are summarized in **Appendix G**). On-road emissions were calculated using the EMFAC 2007 computer model for a vehicle fleet (specific to the Bay Area) operating in 2012. A summary of total emissions for principal construction phases at both the LCSD and sampling station sites is presented in Table 5.8-4.² As indicated in this table, total project-related construction emissions would exceed the BAAQMD's ~~2010 proposed~~ significance threshold for NO_x, but would not exceed ~~2010 proposed~~ thresholds for any other criteria pollutants. This exceedance of the NO_x threshold would be a potentially significant impact. With implementation of BAAQMD exhaust controls presented in Mitigation Measure M-AQ-1b (Exhaust Control Measures), the project's construction-related exhaust emissions could be reduced to 140.5 pounds per day, but mitigated levels (as shown in Table 5.8-4) would still exceed the ~~2010 proposed~~ BAAQMD threshold for NO_x of 54 pounds per day, requiring additional mitigation. In accordance with the ~~2010 draft proposed~~ guidelines, implementation of Mitigation Measure M-AQ-1c (Additional Exhaust Control Measures) could reduce NO_x levels by an additional 30 to 40 percent (to approximately 84 to 98 pounds per day). However, the NO_x emissions would not be reduced to less than the ~~2010 proposed~~ BAAQMD significance threshold of 54 pounds per day, even with implementation of all reasonably available mitigation measures. Therefore, under the ~~2010 proposed~~ BAAQMD guidelines, the project's construction-related NO_x emissions would be *significant and unavoidable*.

Page 5.8-23: The first and second full paragraphs are revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

The results of the HARP model analysis showed that emissions from operation of diesel-powered equipment at the LCSD construction site would result in increased cancer risk of 2.35 cases per million people and acute risk of less than 1 at the closest residences to the project site, located northeast of the LCSD and east of I-280 (see Appendix G, Health Risk Assessment for LCSDI). Exposure to construction-related DMP as well as any associated increased cancer risk would be relatively lower at more distant residences and schools (e.g., Odyssey Middle School and Highlands Elementary School) located farther to the east. The BAAQMD considers a risk of 1 in a million people to be insignificant, and a risk of 10 in a

² The model outputs for off-road exhaust runs and the summary of on-road emissions are included in Appendix G.

million people to be significant.³ Because the estimated cancer risk of 2.35 cases per million people is less than the BAAQMD's ~~1999adopted~~ and ~~2010proposed~~ 10 cases per million people threshold, DPM emissions associated with project construction would be *less than significant*. The acute risk health index (HI) of less than 1 is also below the BAAQMD's ~~1999adopted~~ and ~~2010proposed~~ acute risk health index significance threshold and would therefore also be *less than significant*.

The HARP model also showed that emissions from haul trucks traveling between the construction site and the Allied Waste Ox Mountain Sanitary Landfill in Half Moon Bay would result in increased cancer risk of less than 1 case per million people and acute risk of less than 1 at the closest residences to the haul route (those located on the north and south sides of Highway 92 about 1 mile east of landfill site; see Appendix G). A cancer risk of less than 1 case per million people is less than the BAAQMD's ~~1999adopted~~ and ~~2010proposed~~ 10 cases per million people threshold and thus would be *less than significant*. The acute risk HI of less than 1 is below the BAAQMD's ~~1999adopted~~ and ~~2010proposed~~ acute risk health index significance threshold and would also be *less than significant*. This calculation assumes that no substantial improvements in DPM controls would be implemented over the lifetime of the construction project. However, it should be noted that multiple statewide DPM control programs⁴ have been adopted and are in various stages of implementation that if implemented would reduce any public health risk associated with project-related haul truck operations.

Page 5.8-24: The second paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Impact AQ-3: Odors generated during project construction.

The LCSDI project would not include any activities where water could stagnate to create potential odor. The project also would not include any building materials such as tar or asphalt that are intrinsically odorous. The analysis below applies to both the ~~1999adopted~~ and ~~2010proposed~~ BAAQMD guidelines, since there would be no changes to the odor guidelines in the ~~2010proposed~~ guidelines.

³ The BAAQMD's Regulation 2, Rule 5, *New Source Review of Toxic Air Contaminants*, specifies that a cancer risk of 1 in a million or less (over a 70-year-lifetime exposure period) is an insignificant risk, and no further review of health-related impacts is required. If a project has a risk greater than 1 in a million, it must be further evaluated to determine acceptability. Factors that affect acceptability include the presence of controls on the rate of emissions, the location of the site in relation to residential areas and schools, and contaminant reductions in other media such as water. In general, projects with risks greater than 1 in a million but less than 10 in a million are approved if other determining factors are acceptable. Projects with risks greater than 10 in a million are generally not approved. Projects that are not approved may be reevaluated if emissions are reduced, thus reducing their risks. This BAAQMD rule also specifies that an acute risk hazard index of 1.0 or less is less than significant, and no further review is required.

⁴ The Diesel Risk Reduction Plan was adopted by the CARB in 2000 and calls for reducing 2000 DPM levels by 75 percent by 2010 and 85 percent by 2020. The plan contains new regulatory standards and retrofit requirements (where feasible and cost effective) for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent, overall, from current levels; and new Phase 2 diesel fuel regulations to reduce the sulfur content levels of diesel fuel to no more than 15 ppm to provide the quality of diesel fuel needed by the advanced DPM emission controls.

Pages 5.8-24 and 5.8-25: The last paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Impact AQ-4: GHG construction emissions and conflicts with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.

The majority of project construction activities at the LCSD site are scheduled to occur over a 9-month period, and the resulting exhaust emissions from off-road equipment, on-road trucking, and construction worker commute traffic during this period are expected to contribute minimally to long-term regional increases in GHGs. As described above in Section 5.8.3.2, no state or regional air quality agency has adopted a methodology or quantitative threshold (such as those that exist for criteria pollutants) that can be applied to a specific development or construction project to evaluate the significance of an individual project's contribution to construction-related GHG emissions. The BAAQMD's ~~2010 proposed~~ CEQA Air Quality Guidelines also do not specify thresholds of significance for construction-related GHG emissions. However, ~~2010 proposed~~ guidelines encourage incorporation of best management practices to reduce GHG emissions during construction, such as using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet, using local building materials of at least 10 percent, and recycling or reusing at least 50 percent of construction waste or demolition materials (BAAQMD, ~~2010b2009~~). ~~implementation of construction GHG reduction strategies where feasible, such as: In the future, the BAAQMD will likely develop a list of best management practices, such as alternative fuels, local materials, and recycling of construction and demolition waste, to reduce construction-related GHG emissions~~

Page 5.8-25: The first sentence of the first full paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010:

Despite the absence of ~~1999 adopted~~ or ~~2010 proposed~~ quantitative thresholds for construction-related GHG emissions, this analysis quantifies the estimated GHGs that would be emitted during project construction for informational purposes.

Page 5.8-26: The last sentence of the first full paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010:

Therefore, the impact is considered *less than significant* at both the LCSD and sampling station sites under both the ~~1999 adopted~~ and ~~2010 proposed~~ BAAQMD guidelines.

Page 5.8-26: The last sentence of the second paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Therefore, the project's operational impacts related to air pollutant emissions and odors would be *less than significant* under both the ~~1999 adopted~~ and ~~2010 proposed~~ BAAQMD guidelines.

Page 5.8-27: The first sentence of the second full paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

As indicated above, ~~no the state or regional air quality agency~~ has not adopted a methodology or quantitative threshold (such as those that exist for criteria pollutants) that can be applied to a specific development or construction project to evaluate the significance of an individual project's contribution to GHG emissions.

Page 5.8-27: The first sentence of the last paragraph is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

The BAAQMD's ~~2010 proposed~~ CEQA Air Quality Guidelines specify a threshold of 1,100 metric tons of CO₂-E per year for operational GHG emissions for land use development projects (e.g., residential, commercial, industrial, and public land uses and facilities) and 10,000 metric tons per year for stationary sources (e.g., projects involving processes or equipment that emit GHG emissions).

Page 5.8-29: The following provision is added to the end of Mitigation Measure M-AQ-1a to provide a system for receiving and responding to questions and dust complaints from the public during construction activities.

- Post publicly visible signage with the telephone number and person to contact at the SFPUC regarding dust complaints. This person, or project liaison, shall respond and take corrective action within 48 hours. The phone number of the BAAQMD shall also be visible to ensure compliance with applicable regulations.

Page 5.8-29: Mitigation Measure M-AQ-1b is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

5.8.3.6 Mitigation Measures

Mitigation Measure M-AQ-1b: Exhaust Control Measures.

To limit exhaust emissions associated with the project, the SFPUC shall implement the following exhaust controls, where applicable:

- Contract specifications shall include Sections 2480 and 2485, Title 13, California Code of Regulations with supplemental idling restrictions to two minutes as specified in Mitigation Measure M-AQ-1c, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or ~~two~~five minutes at any location. In addition, the use of diesel auxiliary power systems and main engines shall be limited to ~~two~~five minutes when within 100 feet of homes or schools while the driver is resting. Clear signage shall be provided for construction workers at all access points.

Page 5.8-30: Mitigation Measure M-AQ-1c is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Mitigation Measure M-AQ-1c: Additional Exhaust Control Measures

~~If proposed BAAQMD CEQA Guidelines are adopted and in effect at the time of EIR certification, the~~ SFPUC shall implement the following BAAQMD-specified exhaust controls in addition to those controls specified in Mitigation Measure M-AQ-1b to reduce exhaust emissions associated with the project:

- Limit idling time of diesel powered construction equipment to two minutes. ~~(If proposed BAAQMD CEQA Guidelines are adopted and in effect at the time of EIR certification, this measure shall supersede the condition in Mitigation Measure M-AQ-1b which limits idling to five minutes at any location other than a school.)~~

Pages 5.8-30 through 5.8-33: The following cumulative impacts discussion is revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010 and new information provided by the BAAQMD in May 2010 regarding DPM emissions associated with freeways in the Bay Area.

5.8.3.7 Cumulative Impacts

Impact C-AQ: Cumulative construction emissions of criteria pollutants, toxic air contaminants, and greenhouse gas emissions.

The geographic scope of potential cumulative air quality impacts encompasses the San Francisco Bay Area Air Basin for criteria pollutants and the immediate project site vicinity for diesel particulates. The geographic scope for GHG emissions, while theoretically global in extent, is considered in regional and statewide terms for practical purposes.

Criteria Pollutants

The SFBAAB's nonattainment status for ozone, PM₁₀, and PM_{2.5} indicates that a significant cumulative air quality impact exists in the air basin. When project-related construction emissions are considered together with concurrent construction emissions associated with other projects listed in Table 5.1-1 in Section 5.1.4 (including other SFPUC water facility projects in the vicinity), cumulative short-term emissions of criteria pollutants (including ROG, NO_x, PM₁₀, and PM_{2.5}) would increase and impacts would be potentially significant because of the region's nonattainment status for ozone and suspended particulates (PM₁₀ and PM_{2.5}). Under the 1999~~adopted~~ BAAQMD CEQA Guidelines, the LCSDI project's incremental contribution to nonattainment of ozone and suspended particulates would be reduced to a less-than-significant level with implementation of Mitigation Measures M-AQ-1a (Dust Control Measures) and M-AQ-1b (Exhaust Control Measures); therefore, the LCSDI project's contribution to cumulative air quality impacts related to emissions of ozone, PM₁₀, and PM_{2.5} would not be cumulatively considerable and would be *less than significant*, under the 1999~~adopted~~ BAAQMD guidelines.

However, project-related construction emissions would exceed the BAAQMD's ~~2010proposed~~ significance threshold for NO_x. When compared to the BAAQMD's ~~2010proposed~~ threshold for NO_x, implementation of Mitigation Measure M-AQ-1b (Exhaust Control Measures) would not reduce the project's incremental increase in NO_x to a less-than-significant level and the project's contribution of NO_x, an ozone precursor, would contribute to the region's nonattainment status of ozone. With implementation Mitigation Measures M-AQ-1b (Exhaust Control Measures) and M-AQ-1c (Additional Exhaust Control Measures), the project's construction-related exhaust emissions would still exceed the ~~2010proposed~~ BAAQMD threshold for NO_x and the project's NO_x contribution to cumulative air quality impacts and to regional air quality conditions would be *significant and unavoidable*. There are no other feasible mitigation measures available to further reduce cumulative NO_x emissions to below the BAAQMD ~~2010proposed~~ significance threshold for NO_x.

Toxic Air Contaminants

Construction of several cumulative projects (e.g., SFPUC's New Crystal Springs Bypass Tunnel [NCSBT] project, SFPUC's Crystal Springs Pipeline No. 2 [CSPL2] Replacement project, and SFPUC's Crystal Springs/San Andreas [CSSA] Transmission Upgrade project) could occur at the same time as the LCSDI project, and all of these projects could overlap in the LCSD vicinity and/or along the Crystal Springs Road/Polhemus Road truck haul route. Construction activities associated with these projects would result in cumulative localized increases in DPM, a TAC. The closest downwind sensitive receptors that would be subject to DPM emissions would be residences located east of the dam on both sides of Crystal Springs Road, and Odyssey School, located at the Crystal Springs Road/Polhemus Road intersection. The combined DPM emissions associated with the NCSBT, LCSDI, CSPL2 Replacement, and CSSA Transmission Upgrade projects would have the potential to exceed the ~~1999adopted~~ BAAQMD significance threshold of 10 in one million,⁵ but required implementation of Sections 2480 and 2485, Title 13, California Code of Regulations, restricting idling of trucks for 30 seconds or less in front of a school or five minutes at any location (also specified in Mitigation Measure M-AQ-1b), would reduce this project's potential DPM emissions to less-than-significant levels. In addition, required implementation of exhaust controls (Mitigation Measures M-AQ-1b and M-AQ-1c) as part of the LCSDI project would reduce the project's contribution to cumulative DPM emissions so that the LCSDI project's residual contribution to cumulative construction-related DPM emissions would be less than cumulatively considerable and therefore, *less than significant* under adopted BAAQMD significance thresholds for TACs/DPM.

Under the ~~2010proposed~~ BAAQMD significance thresholds, the cumulative local community risk and hazard impacts on residential and school receptors would be significant if the excess cancer risk exceeds 100 in a million, the non-cancer risk exceeds a Hazard Index of 1.0, and all existing, proposed, and future sources of DPM within 1,000 feet of a receptor exceed an ambient annual average PM_{2.5} concentration of 0.8 µg/m³ (BAAQMD, ~~2010b2009~~). The

⁵ The LCSDI's risk would be 2.35 in a million, while the NCSBT's excess cancer risk would be up to 10 chances in a million (San Francisco Planning Department, 2007), the CSSA's risk would be 0.1 in a million (San Francisco Planning Department, 2009), and the CSPL2's risk would be well below 1 in a million.

~~2010 proposed thresholds, unlike the 1999 adopted thresholds, are an absolute threshold for all sources within the 1,000-foot zone of influence, whereas the 1999 adopted thresholds are for evaluation of an individual project's contribution. The proposed thresholds do not specify a threshold for determining the significance of a project-specific contribution when a cumulative threshold is exceeded. For the purposes of this analysis, when using the proposed thresholds, a conservative assumption has been made that any contribution of TAC emissions would be cumulatively considerable if a cumulative threshold would be exceeded when all TAC sources within 1,000 feet of the project are considered.~~

As mentioned above, the ~~2010 proposed~~ thresholds define a 1,000-foot zone of influence for evaluation of cumulative TAC emissions. Thus, the 1,000-foot zone of influence is defined as any location within 1,000 feet of where the project would emit construction emissions containing TACs, i.e. DPM in this case. Within the zone of influence, existing sources (such as roadways), present and future cumulative projects, as well as the proposed project could all contribute DPM emissions. Major cumulative sources within 1,000 feet of LCSDI site include the CSSA Transmission Upgrade project and Site 1 from the CSPL2 Replacement project, as well as the I-280 freeway, Crystal Springs Road, and Skyline Boulevard. Most sensitive receptors are located more than 1,000 feet from the existing LCSD, but there are some residences located within 1,000 feet of the LCSDI construction area, including residences both north and south of Crystal Springs Road and recreationists using the Sawyer-Camp Trail. Of these, most of these receptors are located approximately 700 feet or more from the I-280 freeway, but there are a few residences north of Crystal Springs Road that are located between 250 and 800 feet from this freeway. ~~Since the excess cancer risk associated with freeways alone can exceed the proposed BAAQMD threshold of 100 chances in a million within 500 feet (CARB, 2005), it is possible that the freeway by itself would exceed the proposed BAAQMD significance threshold for DPM. Although I-280 has a relatively lower truck fraction of overall traffic compared to other freeways (i.e., U.S. 101 or I-80) and lower attendant health risks, any additional DPM emissions resulting from SFPUC projects in the LCSD vicinity (within 500 feet of I-280) could be cumulatively considerable since it could contribute to existing exceedance of this threshold. Although DPM emissions from the LCSDI project were determined to be less than significant when compared to proposed thresholds, the cumulative DPM emissions from all sources within 1,000 feet of affected sensitive receptors could still exceed the proposed threshold and, therefore, are conservatively considered to be potentially significant and unavoidable under the proposed BAAQMD guidelines. There are no feasible mitigation measures available to further reduce cumulative DPM emissions within 500 feet of I-280 beyond implementation of exhaust controls (Mitigation Measures M-AQ-1b and M-AQ-1c). According to the BAAQMD (2010c), the I-280 freeway poses an excess cancer risk of 23 chances in a million at 200 feet, 7 chances in a million at 500 feet, and 0.28 chances in a million at 700 feet. The non-cancer hazard index (chronic and acute) is 0.06 at 200 feet, 0.02 at 500 feet, and 0.00 at 700 feet. Risks associated with Crystal Springs Road and Skyline Boulevard would be substantially lower since they are carry much lower traffic volumes than the I-280 freeway. When risks from cumulative development (including the LCSDI project) are added to the risks associated with the freeway, the combined risks could be as high as 36.5 chances in a million under worst-case conditions (if all project construction~~

occurred simultaneously, which is unlikely), well below the 2010 BAAQMD thresholds of 100 in a million. Therefore, the cumulative DPM emissions would not be cumulatively considerable when compared to the 2010 BAAQMD guidelines, and this cumulative impact would be less than significant.

Greenhouse Gases

The project's GHG emissions would contribute to cumulative climate change effects as described under Impacts AQ-4 (construction emissions) and AQ-6 (operational impacts). Under these impact discussions, the project's GHG emissions were determined to be less than significant when compared to regional and statewide GHG emissions, as well as ~~2010 proposed~~ BAAQMD significance thresholds for GHGs. Therefore, the project's contribution to cumulative GHG emissions and associated climate change impacts would not be cumulatively considerable (*less than significant*).

Page 5.8-33: The second, third, and fourth references are revised as follows to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

BAAQMD, *Ambient Air Quality Standards and Bay Area Attainment Status*, 2010a, available online at <http://www.baaqmd.gov/Divisions/Planning-and-Research/Emission-Inventory-and-Air-Quality-Related/Air-Quality-Standards.aspx>, accessed on January 18, 2010.

BAAQMD, *California Environmental Quality Act, Air Quality Guidelines*, ~~June 2010b~~ ~~December 2009~~. Available online at http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft%20BAAQMD%20CEQA%20Guidelines_Dec%207%202009.ashx
http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_June%202010.ashx. Accessed on ~~January 19~~ July 8, 2010.

BAAQMD, *Roadway and Highway Screening Tables*, May 2010c. Available online at: http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Roadway_Screening_Tables_May_2010.ashx. Accessed on May 13, 2010.

Section 5.9, Wind and Shadow

There are no text revisions to Section 5.9, Wind and Shadow, of the Draft EIR.

Section 5.10, Recreation

There are no text revisions to Section 5.10, Recreation, of the Draft EIR.

Section 5.11, Utilities and Service Systems

There are no text revisions to Section 5.11, Utilities and Service Systems, of the Draft EIR.

Section 5.12, Public Services

There are no text revisions to Section 5.12, Public Services, of the Draft EIR.

Section 5.13, Biological Resources

The text revisions below supplement and, in some cases, revise the text on individual special-status plant species in Draft EIR, Volume 1, Chapter 5, Section 5.13, pages 5.13-15 through 5.13-22 (see the discussion under the headings *Review of Available Information for Data Adequacy, Fountain Thistle* and *Review of Available Information for Data Adequacy, Other Special-status Plants* in Section 4.17.2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

The discussion of Franciscan onion on pages 5.13-15 and 5.13-20 is supplemented as follows:

. . . . This species is present in Sonoma, San Mateo, and Santa Clara Counties (CNPS, 2001). There is a potential for this herb to occur within the project area based on available habitat, including serpentine outcrops and dry hillsides with clay soils. Out of 14 occurrences recorded by CNDDDB, nine are in San Mateo and Santa Clara Counties; of these, at least one and possibly as many as three localities are on SFPUC Peninsula watershed land. Seven localities have been reported more recently on SFPUC watershed land totaling 0.96 acre; these are in San Mateo canyon and along the eastern edge of Crystal Springs Reservoir. This species was observed at five additional locations during project surveys in 2006, primarily along the margin of Lower Crystal Springs Reservoir, occupying a total area of 0.02 acre of grassland and woodland in the project area below 287.8 feet and 0.01 acre between 287.8 feet and 291.8 feet. More than 216 individuals were observed at these locations. No information is available on population trend of this species. CNDDDB (CDFG, 2009c) notes that threats include trampling (in a park setting) and competition from non-natives.

The discussion of fountain thistle on page 5.13-20 is supplemented as follows:

Historically, fountain thistle occurred in San Mateo and Santa Clara Counties, but it is now limited to San Mateo County (Federal Register, 1995). Based on recent survey data (SFPUC, 2010), the total known population is between 25,000 to 26,000 individuals occupying approximately 2.5 acres. Fountain thistle was found at two locations within the project area in 2006. When assessed in late 2009, 0.56 acres of Crystal Springs fountain thistle was present at elevations up to 291.8 feet, and of this, 0.30 acre was within the future operational area (up to 287.8 feet). With regard to the condition of fountain thistle populations, the available data

are insufficient to draw detailed conclusions as to trends. Several populations of fountain thistle known at the time of the Recovery Plan have become extirpated, while several have been discovered that were not known at the time of the Recovery Plan preparation. Other than the Boat Ramp population, which appears to have formed in response to the recent development of suitable conditions, it is not known whether the new populations are newly-developed, or whether they simply were undiscovered. The threats that are better known include: (1) jubata grass, which has greatly reduced or eliminated fountain thistle populations in one or more locations; and (2) alteration of hydrology, which is apparently the cause of extirpation of populations at the Triangle and the type locality at L10.

The discussion of San Francisco collinsia on page 5.13-20 is supplemented as follows:

. . . . This collinsia species occurs from San Francisco County south to Monterey County (CNPS, 2001). CNDDDB reports 12 occurrences of San Francisco collinsia in San Mateo and Santa Clara Counties; of these, as many as four may be on SFPUC Peninsula watershed land. San Francisco collinsia was observed at three additional locations during surveys of the project area in 2006, occupying a total area of 0.01 acre below 287.8 feet elevation. Approximately 620 plants were observed at these locations. Although no San Francisco collinsia were observed in the elevation range 287.8 feet to 291.8 feet, a larger population was present outside the project area on the very steep, shady oak woodland slope above 291.8 feet. As this is more typical habitat for the species, it appeared that seed from this area was the source of the lower population. No information is available on population trend of this species. CNDDDB (CDEG, 2009c) notes that threats include road and trail maintenance and erosion.

The discussion of western leatherwood on pages 5.13-20 through 5.13-21 is supplemented as follows:

. . . . This shrub occurs from south of Sonoma County to San Mateo and Santa Clara Counties (CNPS, 2001). CNDDDB reports 16 records from San Mateo and Santa Clara Counties, of which five are located on SFPUC Peninsula watershed land. An additional 14 records totaling 0.44 acre have been recorded recently in the SFPUC watershed GIS; in addition, several hundred localities consisting of isolated individuals or small numbers of individuals are known on watershed land but have not been incorporated into the GIS database (Foree, 2010). Western leatherwood was observed at three locations during surveys of the project area in 2006, occupying a total area of 0.09 acre below 287.8 feet. Twenty-eight individuals were observed at these locations. No plants were observed in the elevation range between 287.8 and 291.8 feet. Population trend of this species is difficult to assess, as it is underreported. CNDDDB (CDEG, 2009c) notes that threats include habitat loss due to development, brush thinning for fire management, and competition from non-natives.

The discussion of fragrant fritillary on page 5.13-21 is supplemented as follows:

. . . . Fragrant fritillary is found from Sonoma and Solano Counties south to Monterey and San Benito Counties (CNPS, 2001). Fragrant fritillary has an elevation range of 10 to 1,345 feet, and occurrences of this species have been recorded directly adjacent to Upper Crystal Springs Reservoir (GCNPA, 2001). CNDDDB has a total of 59 occurrence records for fragrant fritillary, of which 16 are in San Mateo and Santa Clara Counties. At least three of these are on SFPUC

Peninsula watershed land. In 2001, the Golden Gate National Recreation Area (GGNRA) mapped fragrant fritillary in an area encompassing 60.12 acres, mostly on Pulgas Ridge. Grassland communities within the project area provide suitable habitat for this species, but, Although it was not observed during surveys in 2006, an investigation by EIP in 1999 reported two occurrences of fragrant fritillary totaling about 0.30 acre in and near the project area, in serpentine bunchgrass habitat on the east side of Upper Crystal Springs Reservoir. About half of the mapped area, or an estimated 0.15 acres, was situated within the project area, all between the elevations of 287.8 and 291.8 feet. No information is available on population trend of this species. CNDDDB (CDFG, 2009c) notes that threats include competition from non-native species, grazing, trail use and habitat loss.

The discussion of Marin western flax on pages 5.13-21 through 5.13-22 is supplemented as follows:

. . . . Marin western flax occurs from Marin County to San Mateo County (Federal Register, 1995), and there are several known occurrences of this species within the project area (GGNRA, 2001). CNPS has a total of 28 occurrence records for Marin western flax, of which 11 are in San Mateo and Santa Clara Counties. Five of these are located on SFPUC Peninsula watershed lands. GGNRA in 2001 mapped Marin western flax in an area of 45.32 acres on Peninsula watershed land, but more recent and precise measurements of occupied habitat indicate that Marin western flax occupies only 2.58 acres there. Marin western flax was observed in serpentine grasslands at four additional locations during project surveys in 2006, occupying a total area of 0.02 acre. Almost all of this was in the elevation range 287.8 to 291.8 feet; only an estimated 0.002 acre was located below 287.8 feet. A general decline in the overall population has resulted in its listing by the CDFG and USFWS. Threats include (CDFG, 2009c) competition from non-natives, development, trampling, highway maintenance and trail use.

The discussion of Crystal Springs lessingia on page 5.13-22 is supplemented as follows:

. . . . This species is found in Sonoma and San Mateo Counties (CNPS, 2001). CNDDDB has a total of nine occurrence records for Crystal Springs lessingia, of which seven are in San Mateo County. Four occur on SFPUC Peninsula watershed land. Based on SFPUC GIS database information and GGNRA surveys in 2001, Crystal Springs lessingia occupies 72.59 acres on the east side of Upper Crystal Springs Reservoir. The most recent CNDDDB records indicate that the primary populations on SFPUC Peninsula watershed lands have been estimated in the range of 10,000 to 100,000 individuals, while the Sonoma County populations are small, consisting of only a few hundred individuals (CNDDDB, 2010). Approximately 5,800 Crystal Springs lessingia plants were observed at nine locations during surveys of the project area in 2005, occupying a total area of 5.7 acres. Crystal Springs lessingia readily occupies very open serpentine substrates, and has been observed to occupy habitat below the current maximum reservoir operating elevation of 283.8 feet when the reservoir does not fill completely. Several of these colonies continued upslope, occupying extensive areas outside of the project area. Crystal Springs lessingia also occurs in the grasslands and shoreline of Staging Area 9 near the Boat Ramp and along the access road from Skyline Boulevard. Of the 5.7 acres mapped within the project area, 2.59 acres were mapped at elevations below 287.8 feet, while 3.08 acres were between 287.8 and 291.8 feet. The population trend of this species is unknown. CNDDDB (CDFG, 2009c) notes that threats include competition from non-natives, especially yellow star thistle.

The discussion of arcuate bush mallow on page 5.13-22 is supplemented as follows:

.... This species occurs in San Mateo, Santa Cruz, and Santa Clara Counties (CNPS, 2001). CNDDDB has a total of 21 occurrence records for arcuate bush mallow, of which 19 are located in San Mateo and Santa Clara Counties. Two of these are known from the SFPUC Peninsula watershed. Arcuate bush mallow was observed at three additional locations during surveys of the project area in 2006, occupying an area of 85 square feet. Eight bush mallow plants were observed at these locations. All arcuate bush mallow observed were located in the elevation range 287.8 to 291.8 feet. The population trend of this species is unknown, but it appears to be declining. CNDDDB (CDEG, 2009c) notes that threats include fire suppression, road and trail maintenance, erosion, and competition from non-natives.

Page 5.13-51, last paragraph, and page 5.13-56, fourth full paragraph: The identical paragraph found on both of these pages is revised in response to Comment B1.

The total extent of federal jurisdictional waters in the project study area is 1,342.10~~308.49~~ acres, ~~which fall under state jurisdiction as well~~ (see below). ~~In addition, 1,033.61 acres of open water are under state jurisdiction only~~ (see Appendix GH of this EIR; Entrix/MSE, 2007).

Page 5.13-68, end of the last paragraph: The following text revision is made in response to Comment B1.

The riparian component of the wetlands loss would be 113 linear feet of channel. In addition, 0.06 acre of artificial pond on top of the dam would be lost. The artificial pond is not considered jurisdictional waters of the U.S. and thus is not protected by the Corps, but the pond is used as breeding habitat by the CRLF and receives runoff from seeps, and is therefore a water of the state.

Page 5.13-85: The last paragraph is revised in response to comments requesting more discussion on the context for the analysis of impacts on fountain thistle and Marin western flax (see the discussion under the heading, *Impacts on Fountain Thistle and Marin Western Flax*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

Impacts on listed plants due to increased maximum normal operating elevation. Populations of two federally and state-listed plant species, fountain thistle and Marin western flax, are present in the project area and extend into the projected, future inundation zone that would occur under proposed operations of Crystal Springs Reservoir. The frequent inundation that would occur below the proposed maximum normal elevation under future operations would affect the currently-occupied 0.30 acre of fountain thistle and 0.002 acre of Marin western flax below 287.8 feet to some extent. As a species that requires continually moist soil, fountain thistle may have some adaptation ability for saturated soil and associated changes in soil chemistry (see page 5.13-81 in the Draft EIR for a description of the changes in soil chemistry with flooding). Fountain thistle has been observed to tolerate inundation for periods of up to 10 days (SFPUC, 2010). With the proposed project, however, only elevations lower than 286.8 feet would be inundated for 10 days per year or more, on average. It is

likely, therefore, that some of the area below the proposed maximum operating elevation could be occupied by fountain thistle during most years. No detailed field observations were carried out for Marin western flax in 2009 to corroborate the inundation elevation with the extent of the population of this species; however, incidental observations of this species in the vicinity of the Boat Ramp (Leitner, 2010) indicate that Marin western flax grows down to elevations approximately as low as fountain thistle and arguably has the same tolerance of inundation. Conservatively, then, this EIR concludes that impacts could occur to all of the area below elevation 287.8 feet. This would be a significant impact.

Page 5.13-86: The following text is inserted as a new paragraph directly after the preceding text change on Draft EIR page 5.13-85 in response to comments requesting more discussion on the context for the analysis of impacts on Marin western flax (see the discussion under the heading, *Impacts on Fountain Thistle and Marin Western Flax*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

Marin western flax grows on relatively bare, serpentine soil with limited competition. Wave action on the reservoir margin perpetuates open conditions, and as a result there is a concentration of Marin western flax on the wave-created terraces on the east side of Upper Crystal Springs Reservoir. This annual⁶ species is documented as growing at elevations of 284 feet and below, with the extent of occupied habitat in any given year limited by the maximum reservoir elevation. As with fountain thistle, Marin western flax may occupy areas below 287.8 feet in some or most years, but the maximum potential impact from the rise in maximum reservoir operating elevation would be currently occupied habitat below 287.8 feet, or 0.002 acres. Loss of this habitat would be a significant impact.

Potential impacts on listed plants due to exceedences. The impact resulting from the potential loss of habitat for listed species due to exceedences or infrequent periodic increases in water levels (from 287.8 to 291.8 feet) is considered less than significant likely to be limited and infrequent. This elevation interval supports the majority of listed plant acreage within the project area (0.26 acre of fountain thistle and 0.021 acre of Marin western flax). The inundation during the exceedence periods would be brief and infrequent (see Draft EIR Volume 3, Appendix J, and Appendix M, pages M-9 and M-10), especially at the higher elevations within the exceedence zone. These species both occupy available habitat down to the current year's high water level, and would be expected to do so in the future; thus, potentially affected acreage was based only on the rise in the maximum operating elevation to 287.8 feet and not on the exceedences. In fact, exceedence events lasting 10 days (the observed inundation tolerance of fountain thistle) or more are predicted to occur only a few times per century, and even under worst-case conditions 10 days of inundation would be limited to the lower two feet or so of flood capacity above the maximum operating elevation (287.8 feet to 289.8 feet). Therefore, impacts from exceedences on fountain thistle would occur very rarely and would be limited to the elevation range just above the maximum operating elevation. Conditions would be favorable for fountain thistle in this elevation

⁶ An annual plant is one that completes its life cycle in one year or growing season.

range in the great majority of years. As a result, the potential impact on fountain thistle due to exceedences is considered less than significant.

Marin western flax currently occupies suitable habitat (i.e., bare serpentine soil) down to the current year's high water elevation, and would be expected to do so in the future. Sustained high water elevations would generally be limited to the maximum operating elevation of 287.8 feet. Although Marin western flax demonstrably grows down to the sustained high reservoir elevation, this species could potentially experience some temporary loss of habitat during extended exceedence events where maximum water levels are sustained well above 287.8 feet for many days. However, these rare events would be offset by the frequent availability of habitat below 287.8 feet during the numerous periods when the reservoir is not filled and maintained to the maximum allowed elevation. When evaluating the impacts in the Draft EIR in terms of impact frequency, duration, and magnitude, the conclusion relative to the "substantial adverse effect" standard comprised the net impact including both positive and negative effects. As a result, the potential impact of exceedences on Marin western flax is considered less than significant.

Page 5.13-86: Table 5.13-6 is revised to provide more detailed information about the potential impacts on special-status plant species.

TABLE 5.13-6 (Revised)
SUMMARY OF PREDICTED IMPACTS ON SPECIAL-STATUS PLANTS

<u>Acreage and Significance of Impacts-Scenario</u>	<u>Special-status species (acres)</u>							
	<u>Fountain thistle</u>	<u>Marin western flax</u>	<u>Crystal Springs lessingia</u>	<u>Western leatherwood</u>	<u>Franciscan onion</u>	<u>San Francisco collinsia</u>	<u>Arcuate bush mallow</u>	<u>Fragrant fritillary</u>
<u>Total acreage in project area Existing (below 291.8 ft)</u>	0.56	0.02	5.67	0.09	<u>0.03</u> 0.12	0.01	0.02	<u>0.15</u>
<u>Acreage predicted to be impacted by normal reservoir operations (below 287.8 ft) Predicted loss</u>	0.30	0.002 ^a	2.59	0.09	0.02	0.01	0	<u>0</u>
<u>Significance of impacts, normal reservoir operations^b</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>SM</u>	<u>NA</u>	<u>NA</u>
<u>Acreage potentially impacted by exceedences (between 287.8 ft and 291 ft) No change (no predicted impact)</u>	0.26	0.02	3.08	0.00	<u>0.01</u> 0.10	0.00	0.02	<u>0.15</u>
<u>Significance of impacts, exceedences^b</u>	<u>LS</u>	<u>LS</u>	<u>LS</u>	<u>NA</u>	<u>LS</u>	<u>NA</u>	<u>LS</u>	<u>LS</u>

^a Shown to three significant figures to illustrate extent of predicted impact. All other values are assigned two significant figures.

^b SM = significant, with mitigation can be reduced to less than significant; LS = less than significant; NA = not applicable, no impact

Pages 5.13-86 to 5.13-87: The following text under the heading *Other Special-Status Plants* is revised to expand the analysis of impacts to non-listed special-status plants (see the discussion under the heading, *Impacts on Other Special-status Plants*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

~~Impacts on other nonlisted special-status plants are listed below by the number of acres in the inundation zone below the proposed maximum normal operating elevation (287.8 feet). This occupied habitat is predicted to be lost as a result of the increase in maximum reservoir operating elevation.~~

- ~~• Crystal Springs lessingia: 2.59 acres~~
- ~~• Western leatherwood: 0.09 acre~~
- ~~• Franciscan onion: 0.02 acre~~
- ~~• San Francisco collinsia: 0.01 acre~~

~~Special-status plant losses due to exceedances are not expected to result in substantial mortality or a long-lasting reduction in populations because these species are small in stature and are annuals or relatively short-lived perennials. In addition to fountain thistle, noted above, Crystal Springs lessingia has been observed to grow down to the reservoir's maximum operating elevation, despite the fact that this elevation varies from year to year (Leitner, 2009). Since the periods of inundation would be brief and infrequent, the potential impact on special-status plants from exceedances above 287.8 feet is considered negligible. For Crystal Springs lessingia and Franciscan onion, occupied habitat within the project area was greater above 287.8 feet than below; thus, within the project area, only a fraction of the occupied habitat for these species would be affected. No impacts are predicted for arcuate bush mallow, which had mapped populations only above the 287.8 foot contour.~~

~~The impact resulting from the potential loss of all of the special-status plants due to exceedances would be less than significant. Loss of the populations of six special-status plants—fountain thistle, Marin western flax, Franciscan onion, Crystal Springs lessingia, western leatherwood, and San Francisco collinsia—due to the increase in maximum operating reservoir elevations would be a significant impact.~~

Impacts on other special-status plants due to increased maximum normal operating elevation. As shown in Table 5.13-6, four special-status plants currently grow below 287.8 feet elevation: Crystal Springs lessingia (2.59 acres), western leatherwood (0.09 acre), Franciscan onion (0.02 acre) and San Francisco collinsia (0.01 acre). Fragrant fritillary and arcuate bush mallow only grow above elevation 287.8 feet within the project area, so no impact from the increase in maximum normal reservoir elevation would occur to these two species.

Crystal Springs lessingia is an annual plant that currently is documented as growing at elevations of 284 feet elevation and below. The extent of its actual occupied habitat varies from year to year based on weather conditions and competition. Suitable habitat therefore is

likely to be present from the sustained upper limits of the reservoir (predicted to be 287.8 feet with the project) down to the current year's sustained maximum elevation, which is predicted to vary from year to year but would invariably be at or below 287.8 feet elevation. Thus, the extent of potentially available habitat would vary from year to year, depending on reservoir elevation. However, the estimate of acreage impacted is conservative in that it assumes that all acreage below 287.8 feet would be impacted.

San Francisco collinsia, also an annual plant, typically grows on shady slopes under conifers and hardwoods. Although a small colony was observed below elevation 287.8 feet, it was separated by several feet in elevation from more typical oak woodland habitat farther upslope and may simply be the result of seed "rain" from the colonies farther upslope. The habitat below 287.8 feet is likely less than ideal, but nevertheless is considered potentially impacted.

Franciscan onion and western leatherwood were found at elevations below 287.8 feet. As upland perennials, these species have longer-lived roots and underground parts, such as bulbs. They do not have special requirements for saturated soils, and therefore are unlikely to tolerate the chemical changes in soils when flooded for long periods of time. Therefore, these species are more likely to experience permanent loss of habitat below the proposed reservoir maximum operating elevation, even if the reservoir is not completely filled to 287.8 feet elevation every year.

Impacts on Crystal Springs lessingia, San Francisco collinsia, Franciscan onion and western leatherwood from the increase in maximum normal reservoir operating elevation are considered *significant*.

Potential impacts on other special-status plants due to exceedences. Exceedences could affect special-status plants growing in the elevation zone from 287.8 to 291.8 feet because this area could experience flooding in some years, although this would occur rarely (see EIR, Section 5.15.3.5, pages 5.15-34 to 5.15-35, and Appendix M). The maximum length of inundation would occur only at the lower elevations within this range, as the reservoir elevation rises in response to unusually heavy and unseasonal storms and lowers as water is moved out of the reservoir and the levels return to normal operating elevations. Thus, the lower elevations of the exceedence zone would be inundated the most frequently and for the longest intervals, and the upper elevations of the exceedence zone would be inundated the most infrequently and for the briefest periods. In most years, the exceedence zone would not be inundated. During normal operations, exceedences would mostly likely occur during March or later, when the flood reservation is no longer in place and a large, late season storm occurs. As a result, impacts on some special-status plants in the elevation zone from 287.8 to 291.8 feet could occur, but they would be infrequent, brief and limited in extent, and are most likely to occur in the late winter, prior to the most active portion of the growing season of most plants. In terms of impact frequency, duration, and magnitude, this impact would not rise to the "substantial adverse effect" standard. Species-specific information and rationale are presented in the paragraphs that follow.

Crystal Springs lessingia currently grows down to the water's edge, which would be lower than the proposed maximum operating elevation in most years. Currently-documented distribution of this species shows it growing at elevations with overall inundation frequencies of 4.5 percent or greater, higher than the projected 1.5 percent inundation frequency in the top foot of the maximum normal operating zone (see Table 5.15-3, page 5.15-33). An extended exceedence could preclude the growth of Crystal Springs lessingia in the lowest portion of the exceedence zone for that year, but in most years all habitat in the future exceedence zone would likely be suitable for this species based on the current presence of the species in areas that experience occasional inundation. As a result, the impact of exceedences on Crystal Springs lessingia would not be severe, frequent or long-lasting, supporting a determination that the impact would be *less than significant*.

Fragrant fritillary only grows above 287.8 feet in the project area, and thus would not be expected to be impacted by the increase in reservoir operating maximum to 287.8 feet. Similarly, arcuate bush mallow also grows only above 287.8 feet within the project area. Mapping indicates that both fragrant fritillary and arcuate bush mallow are located at the higher elevations within the future exceedence zone of elevation 287.8 to 291.8 feet. Thus, within the future exceedence zone, they are concentrated in the elevations that would receive the briefest inundation during those infrequent years when extended exceedences would occur. Since these are perennial upland species, they could be more sensitive to inundation than the annuals (Marin western flax and Crystal Springs lessingia) because they have more extensive and longer-lived root systems that could experience stress or damage from low soil oxygen and pathogens. Compared with trees, however, their root systems are much smaller and shallower, so the environment around them would drain and return to aerobic conditions more quickly after inundation, and repair of damaged roots could occur more rapidly. As described above, exceedences are expected to be infrequent, brief and limited in extent, especially in the higher elevations within the exceedence zone where these species occur. Thus, although fragrant fritillary and arcuate bush mallow could be affected to a limited degree by exceedences, the effect is expected to be very infrequent, brief in duration, and of very limited magnitude. Therefore, the operational impact of the project is concluded to be *less than significant* based on the magnitude, severity, duration, and frequency of the effect.

Franciscan onion was found to grow both above and below 287.8 feet elevation within the project area. The extent of the population below 287.8 feet was assumed to be impacted due to the rise in maximum reservoir operating elevation; as with fragrant fritillary and arcuate bush mallow, discussed in the preceding paragraph, the incremental impact of exceedences in the elevation range 287.8 feet to 291.8 feet would be *less than significant*.

Western leatherwood and San Francisco collinsia. According to the technical resources report (Appendix I) western leatherwood and San Francisco collinsia were found within the project area, but only at elevations below 287.8 feet; none were mapped in the elevation interval between 287.8 and 291.8 feet. Therefore, *no impacts* (beyond those resulting from the

increase in the maximum operating elevation) would occur on western leatherwood and San Francisco collinsia as a result of exceedences.

Page 5.13-91: The second paragraph under Mitigation Measure M-BI-1b is revised in response to Comment B12.

Where it is not possible to avoid temporary loss of riparian habitat in construction areas, the SFPUC shall fully restore the functions and services of these habitats onsite, which will include revegetation of all graded surfaces with locally native plant species, and revegetation of channel banks disturbed by construction. Disturbed streambeds shall also be restored. Site restoration shall be undertaken in accordance with a detailed restoration plan or plans prepared by a qualified restoration ecologist and shall be consistent with all required permits, and all planting material shall be pathogen-free. The SFPUC shall initiate mitigation actions as soon as possible. Restoration of temporary-use construction areas shall begin as soon as they are no longer needed. Habitat mitigation and enhancement at compensation sites shall begin as soon as possible after the project is approved and all permits are secured. The final habitat restoration plan or plans shall provide, at a minimum:

Page 5.13-91: The third item below the second paragraph of Mitigation Measure M-BI-1b is revised as follows in response to Comment B12.

Success Criteria. The final habitat restoration plan(s) shall include ecologically based criteria that will be used to determine whether the restoration projects are achieving their objectives (i.e., full restoration within five years). The success criteria shall be based on attributes that are objective and verifiable, such as percent survival of plantings or percent cover achieved by planted materials. The success criteria may include but not be limited to the following:

- Total areal extent of the wetland shall be as large as, or greater in size, than its design acreage.
- Total areal extent of vegetation shall comprise more than 50 percent total cover in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) wetland plant species.
- Invasive species shall not exceed 10 percent total cover.
- The hydroperiod shall provide, at a minimum, 30 days of inundation of the site but inundation shall not persist throughout the entirety of the dry season.

Page 5.13-92: The last paragraph on this page under Mitigation Measure M-BI-1c is revised to provide clarification as follows.

Site Selection. The final compensation plan(s) shall include a description of the factors considered during the final mitigation site selection process, including consideration of watershed needs, ~~onsite alternatives~~, and the practicability of accomplishing ecologically self-sustaining habitats at the mitigation sites. All sites selected must be known to support,

or be able to support, breeding CRLF and SFGS, or as otherwise determined in consultation with natural resource permitting agencies, to compensate for impacted habitat functions and services.

Page 5.13-92: The fourth paragraph of Mitigation Measure M-BI-1c and the following paragraph is added to augment the discussion requirements of the final MMP.

Fully compensate to achieve no net loss of habitat functions and services, as determined in consultation with natural resource permitting agencies, for operational impacts on 13.5 acres of wetland permanent impact, including 7.7 acres (1,357 linear feet) of riparian habitat by restoring and establishing wetlands and riparian habitat on or in the vicinity of the Peninsula watershed lands. The SFPUC shall mitigate for a minimum of 14.01 acres of wetlands. The final acreages will be determined in consultation with the permitting agencies, with further details specified in the MMPs. Mitigation for all potential impacts will be mitigated “up front,” in 2010–2012, at least three to four years in advance of potential operational impacts; depending upon timing associated with the increase in reservoir storage.

Advance mitigation of 14.01 acres of stable, diverse and managed wetlands completed prior to implementation of the proposed operations (see Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-100) will help to ensure there is adequate compensation for the wetland impacts (both due to construction and operations). The adequacy of the mitigation will be further assured because the preponderance of wetland mitigation sites will be in the same watershed or watersheds adjacent to where the impacts will occur, and accessible to the same species of plants and animals displaced as the reservoir reaches its new operating elevation. Other sites may be added as mitigation, as approved by the regulatory agencies. The proximity of impacted sites and areas where the replacement functions would be developed, and the continuity of land management, provides additional reassurance that the sites will be successful and would replace wetland functions and services.

Pages 5.13-93 to 5.13-95: Table 5.13-7 is revised as shown below based on the updated planning and development status of the biological resources mitigation projects. This same table is also revised on pages 6-19 to 6-21 (Vol. 1, Chapter 6, Section 6.13).

Page 5.13-96: The fifth paragraph of Mitigation Measure M-BI-1c is revised to supplement the description of success criteria to be included in the MMP(s).

Success Criteria. The final MMP(s) shall include The success of the compensation sites will be assessed by comparing performance during the monitoring period against objective and verifiable, ecologically based success criteria for use in determining whether the compensation projects are achieving their objectives. The success criteria shall be based on attributes that are objective and verifiable, which reflect the Goals and Objectives of the site. The type of language that will be included in the final MMPs under success criteria are described below. The final success criteria shall provide additional detail and specificity as needed to determine whether compensation objectives are achieved in accordance with resource agency permitting requirements.

TABLE 5.13-7 (Revised)
POTENTIAL MITIGATION PROJECTS, LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT

Site Code*	Name and Location	Type of Mitigation Available for LCSDI Project	Current Status of Site	Project Components
MS-1	Skyline Boulevard Approximately 8 acres at the northern portion of San Andreas Reservoir in the Peninsula watershed, west of the Skyline Boulevard and San Bruno Avenue intersection.	<ul style="list-style-type: none"> wetland habitat scrub habitat pond habitat 	Contains non-native pine and eucalyptus trees and non-native velvet grass and other non-native grasslands surrounded by native scrub habitat. A small seasonal wetland exists in the southern portion of the site where a paved fire road partially dams a small drainage. Site has been degraded by historical land uses and the presence of invasive non-native species.	<ul style="list-style-type: none"> Remove one acre of non-native eucalyptus and plant with scrub vegetation. Remove pine trees and other non-native vegetation and replace with plant-scrub and seasonal wetland vegetation. Within the seasonal wetlands area, small ponds will be excavated. Construct seasonal wetlands and ponds in the native grassland. Construct new access roads.
MS-2	San Andreas Reservoir Approximately 19 acres located on the northwest end of San Andreas Reservoir in the Peninsula watershed.	<ul style="list-style-type: none"> grasslands riparian habitat scrub habitat wetland habitat <u>pond habitat</u> 	Site is dominated by scrub and non-native grassland habitats which are abundant in the surrounding area.	<ul style="list-style-type: none"> Remove existing non-native grassland and scrub vegetation. Excavate and plant wetland vegetation in wetland and pond creation area. Relocate <u>improve</u> portions of existing fire road <u>off of Skyline Boulevard</u>. Install a concrete mats at a dips in the fire road for erosion control.
MS-3	Upper San Mateo Creek Approximately 3 acres located in the northwest portion of the Peninsula watershed approximately two miles northwest of Lower Crystal Springs Reservoir along Trousdale Boulevard.	<ul style="list-style-type: none"> wetland habitat grasslands <u>pond habitat</u> 	Contains stands of non-native pine trees surrounded by scrub habitat and non-native grasslands. Past development has degraded the site and facilitated the invasion of the non-native pines.	<ul style="list-style-type: none"> Remove non-native pine trees. Where pine trees are removed near existing seeps (southern portion of the site), ground stumps would be limited to use of hand tools and tree stumps would not be removed. For wetland creation areas, excavate and grade to create wetland basins, <u>ponds</u> and swales. Construct inlet weirs and outlet structures in wetland creation areas. Recreate the existing culverts. Rehabilitate second existing culverts that conveys water to San Mateo Creek. Utilize spoils from grading to construct berm on western side of wetland area along existing road. Plant native wetland vegetation in wetland area and native grassland species in upland areas; seed graded areas with an erosion-control mix.

TABLE 5.13-7 (Continued)
POTENTIAL MITIGATION PROJECTS, LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT

Site Code*	Name and Location	Type of Mitigation Available for LCSDI Project	Current Status of Site	Project Components
MS-4	Skyline Quarry <u>Approximately 2 acres located north of Highway 92 in the western portion of the Peninsula watershed, and adjacent to the Fifield-Cahill Ridge Trail trailhead.</u>	<ul style="list-style-type: none"> riparian habitat scrub habitat wetland habitat 	Contains trailhead, parking lot, restroom facilities, an unnamed intermittent stream channel, its active floodplains, and portions of adjacent upland landforms within the footprint of a former quarry. Past mining activities and invasion of non-native pampas grass on the site have degraded seasonal wetland and riparian habitat.	<ul style="list-style-type: none"> Remove non-native pampas grass using mechanical and manual methods and herbicides. Excavate mine tailings and plant with native wetland scrub vegetation. Replace existing culvert located southwest of riparian enhancement area and replace culvert at a higher elevation. Enhance riparian through grading and planting of riparian vegetation. Reduce size of existing parking lot and relocate trailhead and restroom facilities.
MS-5	Adobe Gulch Creek South <u>Approximately 3 acres in the southwestern portion of the Peninsula watershed.</u>	<ul style="list-style-type: none"> woodlands wetland habitat riparian habitat 	Contains 3 acres of non-native eucalyptus trees adjacent to Adobe Gulch Creek and some riparian vegetation.	<ul style="list-style-type: none"> Remove vegetation, excavate and grade a shallow depression, and plant native wetland vegetation in wetland creation area. Install outlet channel to drain proposed wetland into Adobe Gulch Creek. Stabilize Adobe Gulch Creek stream bank using bioengineering methods and planting native riparian trees and shrubs. In oak woodland creation and enhancement area, remove up to 3 acres of selected eucalyptus trees. Grade and hydroseed tree removal area. Plant oak trees and install temporary browse protection fencing. <u>Relocate existing staging areas further from riparian habitat.</u>
MS-6	Boat Ramp North <u>Approximately 0.5 acre located directly upslope of the existing access road to a SFPUC boat launch west of Skyline Boulevard in the eastern portion of the Peninsula watershed next to Lower Crystal Springs Reservoir, about ½ mile north of Highway 92.</u>	<ul style="list-style-type: none"> wetland habitat 	Contains a seasonal wetland formed by the impoundment of runoff by the roadway embankment.	<ul style="list-style-type: none"> Excavate grasslands and remove non-native vegetation near existing seasonal wetlands. Raise access road to improve drainage and replace existing culvert with a larger culvert to provide for wildlife passage. Plant native wetland vegetation.
MS-7	Adobe Gulch <u>Approximately 60 acres near Highway 92 in the southwestern portion of the Peninsula watershed, on the west side of Upper Crystal Springs Reservoir.</u>	<ul style="list-style-type: none"> oak woodland wetland habitat <u>pond habitat</u> <u>riparian</u> 	Largely consists of scrub habitat, coyote brush, poison oak, and small trees.	<ul style="list-style-type: none"> Remove poison oak and coyote brush using mechanical means, goat grazing, manual removal, and/or herbicides. Remove non-native cypress trees and plant oak trees within tree removal area. Install temporary browse protection, irrigation pipeline and

TABLE 5.13-7 (Continued)
POTENTIAL MITIGATION PROJECTS, LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT

Site Code*	Name and Location	Type of Mitigation Available for LCS DI Project	Current Status of Site	Project Components
				<ul style="list-style-type: none"> water storage tank for new oak trees. Remove or modify existing access roads and construct a new permanent access road. For wetland creation area, remove vegetation, excavate shallow depressions, and plant native wetland vegetation, and replace existing abandoned road with ephemeral and intermittent drainage and riparian habitat. Decommission existing access road within riparian habitat and ephemeral and intermittent drainage, restore area, relocate road to less impactful area.
MS-8	Boat Ramp South Approximately 2½ acres adjacent to Skyline Boulevard in the eastern portion of the Peninsula watershed next to Lower Crystal Springs Reservoir, about ¼ mile north of Highway 92.	<ul style="list-style-type: none"> woodlands wetland habitat riparian habitat scrub habitat grasslands 	Contains non-native pine trees, grasslands, and shrubs.	<ul style="list-style-type: none"> Remove non-native pine trees. Plant fountain thistle and native grassland species. Manage fountain thistle enhancement and grassland areas through tree and brush control, active seeding, or out-planting of fountain thistle and butterfly host species.
MS-9	Half Moon Bay / Pilarcitos Approximately 15 acres in the City of Half Moon Bay, adjacent to and south of Highway 92, within the historic floodplain of Pilarcitos Creek.	<ul style="list-style-type: none"> wetlands/pond riparian habitat 	Currently used as a corporation yard for Half Moon Bay Public Works. The site contains agricultural plots covered in black plastic tarp that are surrounded by irrigation ditches and gravel roads, which are all remnants of the former ornamental plant nursery at the site. The site also contains buildings and structures that appear to be older than 50 years – the minimum age threshold for potential eligibility for the National Register of Historic Places.	<ul style="list-style-type: none"> Remove existing structures, concrete pad, and paved and gravel roadways. Remove non-native vegetation. Excavate pond area to capture runoff, and regrade site. Install temporary irrigation. Plant riparian plants.
MS-10	Sherwood Point Approximately 3 acres located on the southern terminus of Portola Road on the northern end of Lower Crystal Springs Reservoir.	<ul style="list-style-type: none"> <u>oak woodland</u> <u>wetland habitat</u> 	Currently comprised of non-native eucalyptus, needle grass grassland, non-native grassland, 2 small seasonal wetlands and barren ground.	<ul style="list-style-type: none"> <u>Remove non-natives along Sherwood Pt that are overreaching into adjacent native habitats.</u> <u>Restore native oak woodland.</u> <u>Creation of seasonal wetland along the fringe of the reservoir.</u>

*See Figure 5.13-4 for the location of sites.

For example, at year 5 these may include, but are not limited to:

- Total areal extent of the wetland shall be as large as, or greater in size, than its design acreage.
- Total aerial extent of vegetation shall comprise more than 50 percent total cover in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) wetland plant species.
- Invasive species shall not exceed 10 percent total cover.
- The hydroperiod shall provide, at a minimum, 30 days of inundation of the site but inundation shall not persist throughout the entirety of the dry season.

Page 5.13-96: The following text revision is made to Mitigation Measure M-BI-1c to provide clarification.

Compensation Plan. The final MMPs shall specify the compensation for all habitat types addressed in the plan(s) needed to achieve no net loss of habitat areas, functions, and services, and the rationale ~~used to determine their sufficiency for selection.~~ Factors considered in determining the adequacy of the compensation shall include:

Page 5.13-100: The first paragraph on this page from Mitigation Measure M-BI-3c is revised to provide clarification as follows.

..... The EI shall operate under the direction of a project environmental compliance manager and shall have one or more specialty environmental monitors on call, ~~with a valid permit to handle listed species.~~ USFWS approval will be obtained, as required, to handle listed species. The specialty monitor shall direct all personnel in regards to interactions with sensitive species, perform authorized species relocations, and supervise all reporting on such species.

Page 5.13-101: The second paragraph under Mitigation Measure M-BI-3f is revised in response to Comment B7.

If the minimum fencing distance cannot be achieved and the middens cannot be protected and/or avoided, a qualified biologist shall disassemble middens, or, if adjacent habitat is not suitable, trap and relocate woodrats out of the construction area (using live traps) prior to the start of construction. In addition, the biologists shall attempt to relocate the disassembled midden to the same area where the woodrats are released. If young woodrats are present during disassembling, the biologists shall discontinue disassembling and return at least ~~2448~~ 2448 hours later to allow time for the young to be relocated. The midden may not be fully disassembled until the young have left.

Page 5.13-102: The following text is appended to Mitigation Measure M-BI-7a in response to comments requesting additional detail on proposed mitigation (see the discussion under the heading, *Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats*, in Section 4.17-2,

Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

The monitoring plan for serpentine habitats under Mitigation Measures M-BI-7a and for special-status species under Mitigation Measure M-BI-8a shall include the following elements listed below:

Mitigation Goals and Objectives. Fully mitigate to achieve no net loss of habitat functions and services, as determined in consultation with natural resource permitting agencies, for impacts on special-status plant and serpentine habitats. The SFPUC shall mitigate for all potential inundation impacts “up front”, in advance of potential operational impacts and depending upon timing associated with the increase in reservoir storage.

Site Selection. The final mitigation plan(s) shall include a description of the factors considered during the final mitigation site selection process, including consideration of alternative sites and the practicability of accomplishing ecologically self-sustaining habitats at the mitigation site(s).

Site Protection Instrument. The final mitigation plan(s) shall include a description of the legal arrangements and instruments, including site ownership, used to ensure the long-term protection of the mitigation sites.

Baseline Information. The final permits shall include descriptions of the ecological characteristics of the impact sites and their associated proposed mitigation sites. The MMP shall include descriptions of existing plant communities, existing hydrology, soil conditions, a map showing the locations of the mitigation sites, and other site characteristics as needed.

Mitigation Plan. The final MMPs shall specify the mitigation for all impacted resources addressed in the plan(s) needed to achieve no net loss of habitat functions and services, and the rationale used to determine their sufficiency. Factors considered in determining the adequacy of the mitigation shall include:

- The quality of the affected habitat compared with the potential of the mitigation site;
- The similarity of the mitigation site to the affected habitat in terms of site potential (soil, topographic, and hydrologic characteristics) and proposed vegetation composition and structure;
- The timing of mitigation site development in relation to the anticipated loss of existing habitat;
- The connectivity of proposed mitigation habitat with existing, occupied habitat;
- The likelihood of success of the proposed enhancement actions;
- The differences between the habitat functions and services lost and those expected to be provided by the mitigation;

- Temporal losses of resource functions and services;
- The difficulty of restoring or establishing the desired habitat types and functions; and
- The distance between the affected habitat and mitigation sites.

Mitigation Work Plan. The final MMP(s) shall include detailed written requirements and work descriptions for the mitigation projects, including but not limited to: the geographic boundaries of the projects; timing and sequence; methods for establishing the desired plant communities; plans to control invasive plants and herbivory.

Maintenance Plan. The final MMP(s) shall include a description and schedule of maintenance requirements to ensure the continued viability of the habitats once initial installation is completed.

Success Criteria and Contingency Actions. The final MMP(s) shall include ecologically based criteria for use in determining whether the mitigation projects are achieving their objectives. The success criteria shall be based on attributes that are objective and verifiable, such as percent cover, stem count, or health and vigor of plants. The MMPs will describe actions to be taken if success criteria are not met. Please see the subsection entitled *Success Criteria and Contingency Planning*, below, for more detail.

Monitoring Plan. The final MMP(s) shall include a description of parameters to be monitored to determine whether the mitigation projects are on track to meet success criteria. A schedule for monitoring and reporting on monitoring results must be included. Monitoring and reporting shall continue for five years, or the length of time required by regulatory agencies.

Long-Term Management Plan. The final MMP(s) shall describe how the mitigation sites will be managed after the success criteria have been achieved to ensure the long-term sustainability of the resources, including long-term financing mechanisms and the party responsible for long-term management. Such management will be dictated by periodically examining the performance of the mitigation sites relative to measurable ecological parameters, not as success criteria but as a way of comparing the health of the sites from year to year.

Adaptive Management A decrease in health or vigor of the communities or target species populations at the mitigation sites (such as an insect or weed infestation, disease, or severe herbivory) would trigger corrective actions such as control methods (i.e., hand-pulling weeds, targeted spraying of pathogens), and, if necessary, planting.) The success (or failure) of these actions would form the basis for adaptive management, whereby the maintenance of the resource would improve over time.

Page 5.13-107: The first paragraph of Mitigation Measure M-BI-8a is revised in response to comments requesting additional detail on the proposed mitigation at the Fountain Thistle Management Area (see the discussion under the heading, *Identification of a Mitigation Area for Special-status Plants and Serpentine Habitats*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine

Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

Mitigation Measure M-BI-8a: Listed and Nonlisted Special-status Plants

This mitigation measure shall be carried out in conjunction with Mitigation Measure M-BI-7a. Mitigation for impacts on 0.30 acre of fountain thistle and 0.002 acre of Marin western flax shall be carried out at a specific site with the potential to support these species, as determined by a qualified biologist. An example would be the ~~Boat-Ramp-South-site~~ Fountain Thistle Management Area described above in Table 5.13-7. At the selected mitigation site, surveys for fountain thistle and Marin western flax will be carried out at an appropriate time of year and any populations found will be avoided. In addition, the serpentine bunchgrass habitat in the Fountain Thistle Management Area would be managed to enhance habitat for Crystal Springs lessingia. Habitat would be replaced to achieve no net loss of habitat functions and services for the species, as determined in consultation with natural resource permitting agencies...

Page 5.13-107: The following text is added to the last sentence in the first paragraph of Mitigation Measure M-BI-8a to provide clarification.

.....Increased habitat for Marin western flax is expected to form where non-native woodland and accumulated litter and duff on serpentine soil are removed and grassland restored to the site. Enhanced and restored occupied habitat shall be equal in extent to the predicted loss of habitat below the 291.8-foot elevation, or as otherwise approved by the regulatory agencies.

Page 5.13-107: The following text is appended to the last paragraph of Mitigation Measure M-BI-8a to include a cross-reference to Mitigation Measure M-BI-7a.

Refer to Mitigation Measures M-BI-7a for the monitoring plan for special-status species under Mitigation Measure M-BI-8a.

Page 5.13-107: The last paragraph of Mitigation Measure M-BI-8a is deleted and the following text is added to describe the proposed stepwise implementation of mitigation for special-status plants (see the discussion under the heading, *Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts – Fountain Thistle, Marin Western Flax, and Crystal Springs Lessingia*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

~~All habitat improvements shall be carried out prior to the implementation of the increased maximum normal reservoir operating elevation. For the first five years following the reservoir elevation reaching a sustained operating maximum of 29–87.8 feet, the SFPUC shall carry out annual surveys to determine the effectiveness of the habitat improvements.~~

The SFPUC shall implement a stepwise plan to first compensate for a portion of the anticipated impacts prior to the loss of fountain thistle, Marin western flax, and Crystal Springs lessingia, and then to allow the reservoir to rise according to the proportion of

impacts compensated. The next portion of anticipated impacts will be compensated, followed by another incremental rise in the reservoir.

The methods for determining the mitigation values shall be based on a baseline and a determination of assessment methods developed with the approval of the resource agencies. This approach will ensure no net loss of functions and services. Once the replacement criterion has been fully met, the SFPUC shall be permitted to raise the reservoir to its proposed maximum normal water level.

Prior to each successive incremental increase in maximum water level, the SFPUC shall conduct a survey of the mitigation area to determine if a sufficient number of individuals are present to allow for additional inundation. Documentation of plant numbers shall be provided to the USFWS and CDFG prior to raising the maximum water level by an additional foot.

The SFPUC shall remove and control exotic plants to improve habitat conditions adjacent to areas containing target native plant species. To facilitate recolonization, salvaged seed may be sown in areas where habitat is deemed to be restored. Transplantation will be considered only as a contingency action in the case that success criteria are not otherwise achieved.

Page 5.13-107: The following text augments Mitigation Measure M-BI-8a and follows the added text in the preceding text revision (see the discussion under the heading, *Implementation of Mitigation Actions in Advance of Operational Impacts – Franciscan Onion, San Francisco Collinsia, and Western Leatherwood*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

The acreage and the number of western leatherwood, San Francisco collinsia and Franciscan onion plants affected is relatively small, and each of these species occurs at multiple locations around Crystal Springs Reservoir. The mitigation proposes to enhance several of the reasonably accessible populations around the reservoir through strategies such as reduction in competition and other habitat enhancement.

Franciscan onion grows on clay soils in grasslands and at the edges of serpentine chaparral and hardwood forest, often in association with serpentine substrate. Reported populations are relatively small. The proposed mitigation for this species shall consist of reducing competition in and near two existing populations, ALLI_01 (see Appendix I, page I-221); and ALLI_05 ((see Appendix I, page I-234). Reducing competition would consist of hand-removing non-native exotics such as Mediterranean grasses and yellow star thistle, and cutting down tree and brush that overshadow the Franciscan onion. Habitat enhancement would be carried out above the 287.8 foot elevation, extending as far upslope as suitable habitat is present, up to 0.02 acre.

San Francisco collinsia grows on steep, north-facing oak woodlands. It is weakly associated with serpentine substrates. One population (COLL_03, Appendix I page I-226) is situated

below a maintained service road on the east side of Crystal Springs Reservoir. Most of the population is above the 291.8 foot elevation (Leitner, 2010). Mitigation for this species shall consist of salvaging the seed from the portion of the population that would be impacted by the rise in the reservoir elevation and sowing them upslope in suitable habitat, monitoring for and removing competing understory plants, enhancing up to 0.01 acre.

Western leatherwood occurs in many localities on the Peninsula watershed, usually in very small colonies consisting of one or a small number of individuals. It is most often found in coastal scrub. It does not appear to grow from seed as readily as it propagates vegetatively from the root crown (Foree, 2010). It sometimes appears to be light-starved due to coast live oaks overtopping the coastal scrub (Leitner, 2010). Mitigation for this species shall consist of removing light competition by removing senescent woody vegetation from the populations around Tracy Lake and elsewhere, enhancing habitat for up to 0.09 acre or 28 individuals. If this does not provide a sufficient quantity of mitigation, habitat enhancement shall be carried out in connection with the fuel management program on the watershed, where western leatherwood shall be enhanced by removing competing woody vegetation.

Page 5.13-107: The following text augments Mitigation Measure M-BI-8a and is added to follow the additional text revised in the section above (see the discussion under the heading, *Success Criteria*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

In general, mitigation is planned for areas in or near occupied habitat for one or more special-status plant species. The relative abundance of target species in a given mitigation site will be based on an increase over the *baseline population*, which would be determined by a baseline survey of the mitigation site as well as a reference site located nearby in similar ecological conditions. Many of the target species are annuals or short-lived perennials whose populations may fluctuate considerably from year to year based on weather conditions or other natural variables. Annual adjustments to the quantity of the baseline population shall be made using the variation observed in the *reference population*.

For example, if the success criterion for target species A is an increase of 100 plants and the baseline population is 400 plants in the baseline survey in 2010, the target population is 500 plants. However, if the reference population in 2012 has declined by 10 percent, then the baseline population would be adjusted to 360 plants (400 plants x 90 percent) and the target would be adjusted to consist of an increase in 90 plants (100 plants x 90 percent). Thus, the target population for 2012 would be 450 plants (baseline 360 plants plus adjusted increase of 90 plants = 450 plants). Some of the details of the determination of success criteria will be developed in consultation with the resource agencies, such as whether the population criterion will be based on the total number of individuals, or the number of flowering individuals. This may vary by species.

The preferred site for mitigation for fountain thistle, Marin western flax, and Crystal Springs lessingia is the Fountain Thistle Management Area (FTMA). As shown in Figure 5.13-5, this site supports or is very near known populations of these three special-status species. For the

three other species requiring mitigation, western leatherwood, Franciscan onion, and San Francisco collinsia, mitigation actions shall be carried out elsewhere on SFPUC Peninsula watershed lands, as described above. The alternate sites are in proximity to extant populations of the target species

The primary approach to mitigation for special-status plants is the creation, enhancement, or restoration of habitat near existing populations, with the reasonable anticipation that the plants will colonize suitable habitat. Sowing of such sites with seed salvaged from impact sites may be employed, where feasible, to speed up the colonization process. Transplanting is not a preferred approach, in large part because it tends to be less successful, in the long-term, than habitat creation, and requires ongoing care while plants become established, something that often results in high mortality rates. Thus, although transplantation is not a strategy in mitigation for this project, it may be employed as a contingency action if success criteria are not readily met.

Franciscan onion. Since the area predicted to be impacted is 0.02 acre, two-thirds of the total area occupied by Franciscan onion in the project area, it is assumed that the number of individuals potentially impacted is two-thirds of the total number of individuals (214), or 143 plants. Therefore, the success criterion is an increase of 143 Franciscan onion plants over the baseline, and/or an increase in occupied habitat of 0.02 acre. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

Fountain thistle. The success criterion for this species is an increase of fountain thistle plants over the baseline and/or an increase in occupied habitat equal to that lost to inundation. This could be up to 8,024 fountain thistle individuals and 0.30 acre of occupied habitat, but could be less if impacts are less than predicted. Mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.075 acre and/or 2,006 individuals. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

San Francisco collinsia. Since the area predicted to be impacted is 0.01 acre and an unknown number of individuals, the success criterion is an increase in occupied habitat of 0.01 acre prior to the rise in reservoir elevation. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

Western leatherwood. The success criterion for western leatherwood is the establishment or significant enhancement in the vigor of up to 28 leatherwood plants above the reference population. The increased or enhanced population must be realized prior to the rise in reservoir elevation and persist through the full rise in reservoir elevation plus an additional five years.

Marin western flax. The predicted impact on Marin western flax is 0.002 acre and an unknown number of individuals. The success criterion is, therefore, an increase in occupied habitat of 0.002 acre. This mitigation may be carried out in a stepwise fashion, with one-

fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.0005 acre. The increase in occupied habitat must persist through the full rise in reservoir elevation plus an additional five years.

Crystal Springs lessingia. The predicted impact on Crystal Springs lessingia is 2.59 acre and an unknown number of individuals. The success criterion is, therefore, an increase in occupied habitat of 2.59 acres. This mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.65 acre. The increase in occupied habitat must persist through the full rise in reservoir elevation plus an additional five years. As an alternative to the use of occupied acreage as a measure of success, population numbers may be used to compare the number of plants impacted to the increase in mitigation management areas. The reference population would then be used to demonstrate that the proportion of increase in plants in a given year is attributable to management actions as opposed to natural fluctuation.

Page 5.13-111: Mitigation Measure M-MS-AQ-1 is deleted because prescribed burns for either construction or operations would no longer occur as part of the mitigation requirements for biological resources.

Prescribed Burn Limits

Measure M-MS-AQ-1: For mitigation projects that involve the use of prescribed burns for either construction or operations (e.g., San Andreas Reservoir, Upper San Mateo Creek, or Adobe Gulch, sites MS 2, 3, and 7, respectively), the SFPUC shall ensure that prescribed burns are limited to approximately three acres per day or an appropriate acreage to ensure that emissions rates do not exceed the Bay Area Air Quality Management District significance thresholds for criteria pollutants.

Page 5.13-112: Mitigation Measure M-MS-HY-1 is deleted because prescribed burns for either construction or operations would no longer occur as part of the mitigation requirements for biological resources.

Prescribed Burn Use of Best Management Practices for Protection of Water Quality

Measure M-MS-HY-1: For mitigation projects that involve the use of prescribed burns for either construction or operations (e.g., San Andreas Reservoir, Upper San Mateo Creek, or Adobe Gulch, sites MS 2, 3, and 7, respectively), the SFPUC shall include BMPs for water quality protection as part of prescribed burn planning. The SFPUC will specifically plan all prescribed burns to control erosion after the burn to prevent sediment runoff into streams, reservoirs, and wetlands, including measures, for example, to select fire line locations and consider weather, fuel, soil, and topographic conditions; to avoid intense burns that remove forest floor litter; to avoid burning piles of slash in riparian management zones; and to use natural or existing barriers (e.g., roads, streams, lakes) where possible. BMPs following a prescribed burn include using erosion control measures for fire lines that could erode soil into lakes, streams, and wetlands; revegetation; and the installation of water bars.

Pages 5.13-113 and 5.-13-114: Mitigation Measure M-MS-HZ-3 is deleted because prescribed burns for either construction or operations would no longer occur as part of the mitigation requirements for biological resources.

Prescribed Burn Measures

~~**Measure M-MS-HZ-3:** For mitigation projects that involve the use of prescribed burns for either construction or operations (e.g., San Andreas Reservoir, Upper San Mateo Creek, or Adobe Gulch, sites MS 2, 3, and 7, respectively), the SFPUC shall implement the following measures to reduce the risk of hazards associated with wildland fires.~~

~~***Prescribed Burn Planning.*** To manage the use of prescribed burns, the SFPUC will designate a qualified fire manager to oversee all burn operations. All prescribed burns will have a defined burn plan. The fire manager will determine what type of plan is necessary, and the plan will be subject to his/her approval. Burn plan components will include, but are not limited to, crew size and qualifications, health and safety measures, pre-burn site preparation, onsite equipment, ignition method, medical plan, contingencies, emergency contacts, smoke management, and holding, patrol, and mop-up standards.~~

~~The SFPUC fire manager will ensure containment measures are developed and implemented prior to the start of prescribed fire burns. Fire control lines will be constructed around the perimeter of the area to be burned, and extra suppression resources will be made available during the burning operation. In addition, a contingency plan will be developed prior to burning to account for possible emergencies. Burning will be monitored and limited so that acceptable levels of air quality are not exceeded.~~

~~The SFPUC will ensure that burns are not left unattended at any time and are monitored until they are out. Cleanup actions will be completed before the prescribed burn crews leave the defined burn area, as defined in the prescribed burn plan. The burn area will be inspected the morning following a prescribed burn. The SFPUC fire manager will make the required notifications regarding the completion of a prescribed burn.~~

Section 5.14, Geology and Soils

Page 5.14-17: The second paragraph of Impact GE-4 is revised as follows to provide further clarification regarding dam safety under proposed project conditions (see the discussion under the heading *Dam Safety Under Proposed Project Conditions* under Section 4.1.1, Master Response on Lower Crystal Springs Dam Safety issues, of this Comments and Responses document).

As discussed above in Section 5.14.1, Setting, groundshaking in the project area during an earthquake, measured as peak ground accelerations, is expected to be quite strong (0.69g). The proposed project operations would increase the average and maximum reservoir levels over current levels. However, the existing dam has withstood both the 1906 San Francisco earthquake and the 1989 Loma Prieta earthquake, and the DSOD has certified that the LCSD and reservoir are currently safe to impound water within the proposed increased range of water level elevations (DSOD, 1966). Although strong groundshaking could be experienced in the future under proposed operating conditions, the proposed improvements to the

stilling basin and dam would be designed to withstand groundshaking in accordance with current DSOD seismic standards. With compliance with these standards, subject to review and approval by the DSOD, impacts related to groundshaking would be *less than significant*, and no mitigation is required.

Section 5.15, Hydrology and Water Quality

Page 5.15-9, last paragraph: Text is modified to clarify the information cited in the text and correct the publication date of the reference document.

Dam Failure

Failure of the LCSD during a catastrophic event is considered possible, although highly improbable, and is addressed in regional emergency response planning by San Mateo County and the Association of Bay Area Governments. Studies Dam failure inundation mapping by the San Mateo County Office of Emergency Services indicate that portions of the communities of San Mateo, Foster City, and Hillsborough would be inundated by water from Crystal Springs Reservoir if the dam failed (San Mateo County, ~~2007~~2005).....

Page 5.15-14, fourth paragraph: Discussion of NPDES General Construction Permit is revised in response to Comment H1.

The SWRCB has adopted a Statewide General Permit for Stormwater Discharges Associated with Construction Activity under the NPDES. The permit is applicable to construction sites of one acre or more. A general permit was adopted because the board determined that issuance of individual NPDES permits to construction sites was impractical. The permit also authorizes the discharge of water other than stormwater from the construction site, provided it does not cause or contribute to a violation of any water quality standard. For a construction project ~~To be covered by the general permit, an individual~~ the construction contractor must implement the best management practices (BMPs) specified in the general permit. The contractor must prepare a stormwater pollution prevention plan (SWPPP) that describes how the BMPs would be implemented at the construction site, both during construction and after construction is complete. The discharger (i.e., project sponsor) is legally responsible for ensuring that the construction contractor develops an adequate SWPPP and implements the specified BMPs.

Page 5.15-15, last paragraph: Discussion of beneficial uses of surface water is revised in response to Comment H2.

The existing beneficial uses of San Mateo Creek are listed as: freshwater replenishment, fish spawning, wildlife habitat, and rare and endangered species. Potential beneficial uses of San Mateo Creek are listed as water-contact recreation, non-water-contact recreation, and cold freshwater fish habitat.

Pages 5.15-36 and 5.15-37: The discussion under Impact HY-6 is revised in response to Comment H11 to clarify the dam failure hazards associated with future project operations.

Impact HY-6: Increased flood hazards along lower San Mateo Creek during project operations, including risk of dam failure.

Lower Crystal Springs Dam Vicinity

As described above in Section 5.15.1, Setting, although flood control is not a purpose of Crystal Springs Reservoir, the effect of the reservoir, and the SFPUC's current operating protocol for the reservoir, has been to greatly reduce the risk of flooding along lower San Mateo Creek as a result of ordinary storms over the upper watershed. Flood hazards with the proposed project in place would be similar to the existing condition. With the reservoir's storage capacity restored and an operating protocol in place that would provide a wintertime flood reservation and restrict the normal maximum water surface to a level 4 feet below the spillway, flood risk during ordinary storms would be comparable to current flood risk.

Flood hazards would be reduced during extraordinary storms that could generate flow up to the PMF. Because the LCSD with the proposed improvements would pass the PMF without damage to the dam, flood hazards in the areas along lower San Mateo Creek downstream of the dam would be decreased. This would be a *beneficial* effect of the project.

The dam failure inundation map published by the San Mateo County Office of Emergency Services shows the limit of inundation for the LCSD starting from the dam and stretching to San Francisco Bay. In the event of catastrophic dam failure, floodwaters from Crystal Springs Reservoir are predicted to travel along San Mateo Creek and spread across low-lying areas in the cities of San Mateo and Foster City, ultimately discharging to the bay (San Mateo County, 2005). The inundation zone for LCSD shown in the San Mateo County inundation map represents the path of water that could be expected if the dam completely failed with a full reservoir. The dam inundation map is based on the certified capacity of the dam without the temporary DSOD restrictions, which corresponds to a maximum normal water surface elevation of 291.8 feet, 4 feet higher than the proposed maximum normal water surface elevation of 287.8 feet. Thus, the volume of water that could be released in the event of dam failure with the proposed project would be slightly less than what is assumed in the map.

However, implementation of the proposed project would increase the maximum normal water surface elevation in Crystal Springs Reservoir by 4 feet, from 283.8 feet (DSOD-imposed operational restriction) to 287.8 feet, which corresponds with an increase in water storage of approximately less than 8 percent when compared to existing conditions. In the unlikely event of a complete and catastrophic dam failure with a full reservoir, the proposed increase in water storage would increase the total volume of water that could be released downstream, potentially increasing inundation hazards and affecting a greater area downstream of the dam. In both cases—existing conditions and proposed future

conditions—the volume of water that could be released in the event of a dam failure would be less than assumed in the dam failure inundation map.

Although implementation of the proposed project would increase the volume of water that could be released in the event of catastrophic dam failure when compared to existing conditions, the proposed modifications to the LCSD would decrease the risk of dam failure when compared to the existing condition. Under the existing condition, the spillway of the dam cannot accommodate the PMF without overtopping the dam. Because the existing stilling basin is too small to dissipate the energy of water produced during very large flood events such as the PMF, large flows over the parapet wall could undermine the dam's abutments and foundation and threaten its structural integrity, increasing the risk of dam failure. The proposed project would enable the safe passage of large floods (up to the size of the PMF) over the spillway without compromising the dam's foundation or abutment, thereby increasing dam safety and reducing the risk of dam failure and associated downstream inundation effects. Thus, the proposed project would have a beneficial effect with respect to risk of dam failure and associated flood hazards when compared to existing conditions.

Page 5.15-43: Under Mitigation Measure M-HY-3, the third bullet under the heading *e. Tracking Controls* is revised for clarification.

- Install a facility at the site access to allow for tire washing when vehicles exit the site. This item may be omitted if the RWQCB determines vacuum sweepers per Mitigation Measure M-AQ-1a, or other relevant mitigation measures are sufficient to avoid tracking of dirt.

Page 5.15-44: Under Mitigation Measure M-HY-3, third bullet from the top of the page under the heading *f. In-Stream – Construction BMPs* is revised for clarification.

- Place by hand any physical barriers within lower San Mateo Creek to isolate the construction area for dewatering purposes or control of construction-related stormwater discharges (erosion and sediment control), avoiding the use of vehicles in the creek channel, and carry out the barriers under guidance of a qualified fish biologist to ensure avoidance and minimization of stress, injury, or mortality to aquatic wildlife

Page 5.15-44: Under Mitigation Measure M-HY-3, second to last bullet under the heading *f. In-Stream – Construction BMPs* is revised in response to Comment H3.

- In the event that construction activities create a visible plume in surface waters, initiate monitoring of turbidity concentrations at the discharge site and ~~300~~50 feet downstream while the visible plume persists and initiate corrective action to reduce construction-related turbidity to be in accordance with turbidity criteria specified in the Basin Plan for coldwater fish habitat beneficial use, as measured in surface waters ~~300~~50 feet downstream of the working area. Corrective actions shall also be implemented as needed to ensure construction activities are within the Basin Plan's surface water quality objective for turbidity, which states that turbidity increases shall not be greater than 10 percent in areas where natural turbidity is greater than 50 nephelometric turbidity units (NTU). Corrective actions would depend on the

cause of the discharge of sediment and could include installation of additional silt fences and other erosion control devices, covering of stockpiled material and improvements to the system for treating water from the dewatering operation.

Page 5.15-44: Under Mitigation Measure M-HY-3, second bullet under the heading *h. Waste Management and Hazardous Materials Pollution Control* is revised in response to Comment H3.

- Locate sanitary facilities a minimum of 3200 feet from San Mateo Creek and away from curbs and storm drains

Page 5.15-45: Under Mitigation Measure M-HY-3, the last two bullets under the heading *j. Permitting Monitoring and Reporting* is revised for clarification.

- Notify the RWQCB, ~~CDFG, U.S. Fish and Wildlife Service, National Marine Fisheries Service,~~ and other agencies as required (e.g., CDFG and USFWS) if the criteria for turbidity, oil/grease, or foam are exceeded and undertake corrective actions
- Notify the RWQCB, ~~CDFG, U.S. Fish and Wildlife Service, National Marine Fisheries Service,~~ National Marine Fisheries Service, and other agencies as required (e.g., CDFG and USFWS) immediately of any spill of petroleum products or other organic or earthen materials and undertake corrective action

Page 5.15-47: The following paragraph is inserted after before the third full paragraph of Impact C-HY to clarify the cumulative beneficial effects to the risk of dam failure associated with future operations under the proposed project in combination with the CSSA project.

Currently, in the event of an emergency related to potential dam failure, the DSOD can mandate emergency drawdown of Crystal Springs Reservoir to lower the reservoir level if the dam were to incur severe damage. The SFPUC can implement emergency release discharges of up to 800 cfs of sustainable flow from four existing spill valves plus additional flows from various other pipes at the Crystal Springs Pump Station. The CSSA Transmission Upgrade project includes improvements that would consolidate and increase the emergency release flow rate (up to 1,200 cfs) and would thereby lower the risk of dam failure by enabling faster drawdown of reservoir levels, decreasing the potential for impacts associated with catastrophic dam failure. There would be a cumulative effect of this improvement in combination with the proposed project's effect on reducing the risk of dam failure and associated downstream inundation effects due to the improved ability of the LCSD to accommodate flows of large floods (up to the size of the PMF) over the spillway without compromising the dam's foundation or abutment. Therefore, with respect to potential effects on downstream flooding associated with risk of dam failure, this would be a cumulative beneficial effect.

Page 5.15-9, references: The publication date of the reference document is corrected.

San Mateo County, Dam Failure Inundation Areas – San Mateo County. Available online at: http://www.co.sanmateo.ca.us/vgn/images/portal/cit_609/10/35/436349068dam_Areas2.pdf. ~~2007~~2005. Accessed July 22, 2009.

Section 5.16, Hazards and Hazardous Materials

There are no text revisions to Section 5.16, Hazards and Hazardous Materials, of the Draft EIR.

Section 5.17, Mineral and Energy Resources

There are no text revisions to Section 5.17, Mineral and Energy Resources, of the Draft EIR.

Section 5.18, Agricultural Resources

Page 5.18-1: The title and introduction of Section 5.18 is revised to address potential impacts to forest resources, as recommended in Appendix G of the revised CEQA Guidelines.

5.18 Agriculture~~al~~ and Forest Resources

This section analyzes the potential impacts on agriculture~~al~~ and forest resources that could occur during construction and operation of the proposed Lower Crystal Springs Dam Improvements (LCSDI) project and assesses the potential for project implementation to adversely affect such resources.

Page 5.18-1: The following discussion of forest resources in the project area is added below the heading 5.18.1.1, *Agricultural Resources*.

5.18.1.2 Forest Resources

As described in Section 5.13, Biological Resources, the Peninsula watershed encompasses 23,000 acres of forest land comprised of coast live oak woodland, non-native woodland, and mixed evergreen forest. Statewide land cover mapping prepared by the California Department of Forestry and Fire Protection as part of the Forest and Range 2003 Assessment classify land cover into ten "Major Land Cover" classes. The land cover maps characterize land cover in the Peninsula watershed as hardwood woodland intermingled with conifer forest and scrub along the western shore of Crystal Springs Reservoir, and herbaceous along the eastern margin (CDFFP, 2003).

Page 5.18-1: The following sentence is added above the heading 5.18.2.2 *State Regulations*.

There are no federal regulations that directly pertain to forest resources protection.

Page 5.18-1: The following discussion is added below the second paragraph under the heading 5.18.2.2 *State Regulations*.

The California Forest Practice Act was enacted in 1973 by the California Department of Forestry and Fire Protection to regulate timber harvesting on privately-owned lands in

California. There are no timber harvesting activities within CCSF-owned Peninsula watershed lands; therefore, this state regulation does not apply to the LCSDI project.

Page 5.18-2: The sentence under the heading 5.18.2.3 *Local Regulations* is revised as follows.

There are no local regulations governing agricultural or forest resources that are applicable to the LCSDI project.

Page 5.18-2: The significance criteria are amended to include consideration of impacts on forest resources.

5.18.3.1 Significance Criteria

The City and County of San Francisco (CCSF) has not formally adopted significance standards for impacts related to agricultural or forest resources, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Convert prime farmland, unique farmland, or farmland of statewide importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; ~~or~~
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526);
- Result in loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of farmland to non-agricultural use or forest land to non-forest use.

Page 5.18-2: The following paragraphs are added above the heading 5.18.3.2 *Impacts*.

Conflict with Existing Zoning for, or Cause Rezoning of, Forest Land. The Peninsula watershed is within a Resource Management zoning district (San Mateo County, 1999). Implementation and operation of the LCSDI project would not result in changes to land uses or land use activities and thus, would not conflict with zoning regulations nor result in rezoning of forest land. Therefore, this significance criterion is not applicable to the proposed project.

Result in Loss of Forest Land or Conversion of Forest Land to Non-Forest Use. The Peninsula watershed encompasses 23,000 acres of forest land in San Mateo County. The LCSDI project would result in the conversion of an estimated 31.1 acres up to a maximum of 50.2 acres of upland forest/woodland around the perimeter of Crystal Springs Reservoir to lacustrine, wetland, grassland, and scrub vegetation (see Section 5.13, Biological Resources). However, the CCSF-owned Peninsula watershed does not include any lands managed for forest or timber use and the affected acreage would remain and continue to be managed as habitat for

fish and wildlife, albeit with changes in the habitat types. Therefore, the changes in habitat types together with the mitigation measures proposed for impacts on biological resources (see Section 6.13) are considered consistent with the designated resource uses for vegetation, fish and wildlife. Furthermore, Public Resources Code 12220 defines forest land as land that can support 10 percent or more of native tree cover and that allows for the management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. By this definition the LCSDI project would not result in the conversion of forest land to non-forest use because lacustrine, wetland, grassland, and scrub vegetation are part of the composition of normal and healthy forests. The impacts of tree removal are thoroughly evaluated in Section 5.13, Biological Resources. Therefore, impacts to forest land would be less than significant and are not discussed further in this EIR.

Page 5.18-3, references: Two references are added that correspond with the text revisions on pages 5.18-1 and 5.18-2.

California Department of Forestry and Fire Protection (CDFFP), State of California Map of Land Cover, Multi-Source Data Compiled for Forest and Range 2003 Assessment, March 11, 2003. Available online: <http://frap.cdf.ca.gov/data/frapgismaps/select.asp?theme=1>. Accessed May 27, 2010.

San Mateo County, Planning and Building Division, Countywide Zoning Map, 1999, Available online: http://www.co.sanmateo.ca.us/vgn/images/portal/cit_609/39/43/1168665697zoning.pdf. Accessed May 27, 2010.

Revisions to Volume 1, Chapter 6, Mitigation Measures

Page 6-6: Second paragraph of Mitigation Measure M-CP-1a is revised in response to Comment C3.

There will be three main tasks: gather data, prepare photographic documentation, and prepare a written historical and descriptive report. Photographic documentation shall include 4- by 5-inch negatives in labeled sleeves, 8- by 10-inch prints mounted on labeled photo cards, and an index to the photographs. Photographs shall be taken of the LCSD's character-defining features, including but not limited to the parapet wall, spillway, stilling basin, and abutments, as well as the historical setting of the dam. The research report shall include possible photographic reproduction of any valuable engineering blueprints original construction drawings, if available. If original construction drawings of the LCSD are not available, then the HAER report shall include measured drawings (HAER Level 1).

Page 6-7: Third paragraph of Mitigation Measure M-CP-1a is revised in response to Comment C1.

The SFPUC shall also develop interpretive panels for the LCSD. The panels shall include a history of the resource and some drawings or photographs depicting the unique design and history of the dam. The panels shall also include a brief history of Crystal Springs Valley

prior to completion of the dam and reservoir. As appropriate, information about the relationship between the dam and OS-1 shall be included. The panels shall be displayed at publicly accessible areas adjacent to the dam. The objective of the interpretive panels is to increase local and regional public awareness of this resource as well as awareness of the SFPUC's efforts to educate citizens about the history of the regional water system.

Page 6-8: The following paragraph is inserted before the first paragraph of Mitigation Measure M-CP-3 to correct an editorial error.

Should any indication of an archeological resource be encountered during any soils disturbing activity of the project, the project sponsor shall immediately notify the ERO and shall immediately suspend any soils disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken.

Page 6-10: Under Mitigation Measure M-TR-1, the following text revisions are made to the first bullet in response to Comment R9.

- The SFPUC shall coordinate with San Mateo County on traffic and bicycle detours developed as part of the Crystal Springs Dam Bridge Replacement project to ensure that throughout construction of the LCSDI project, the detours remain accessible and safe for motorists and bicyclists and that adequate signage and notification of the detours are maintained. As part of the SFPUC's coordination with San Mateo County on the Traffic Control Plan, the SFPUC would work with San Mateo County to periodically monitor and maintain accessibility and safety conditions for bicycle and pedestrian traffic along bicycle detours.

Page 6-10: Under Mitigation Measure M-TR-1, the following stipulation is added below the third bullet in response to Comment T8.

- A truck driver education program shall be developed and implemented to inform truck drivers of the increased safety hazards to cyclists and recreational users associated with the movement construction vehicles along popular bicycle routes in the project vicinity, and to reinforce driving practices that promote driver awareness and road safety for all users.

Page 6-14: The following provision is added to the end of Mitigation Measure M-AQ-1a to provide a system for receiving and responding to questions and dust complaints from the public during construction activities.

- Post publicly visible signage with the telephone number and person to contact at the SFPUC regarding dust complaints. This person, or project liaison, shall respond and take corrective action within 48 hours. The phone number of the BAAQMD shall also be visible to ensure compliance with applicable regulations.

Page 6-14: The first bullet point under Mitigation Measure M-AQ-1b is revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

- Contract specifications shall include Sections 2480 and 2485, Title 13, California Code of Regulations with supplemental idling restrictions to two minutes as specified in Mitigation Measure M-AQ-1c, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or two minutes at any location. In addition, the use of diesel auxiliary power systems and main engines shall be limited to two minutes when within 100 feet of homes or schools while the driver is resting. Clear signage shall be provided for construction workers at all access points.

Page 6-14: The first paragraph and first bullet point under Mitigation Measure M-AQ-1c are revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Mitigation Measure M-AQ-1c: Additional Exhaust Control Measures

~~If proposed BAAQMD CEQA Guidelines are adopted and in effect at the time of EIR certification, the~~ SFPUC shall implement the following BAAQMD-specified exhaust controls in addition to those controls specified in Mitigation Measure M-AQ-1b to reduce exhaust emissions associated with the project:

- Limit idling time of diesel powered construction equipment to two minutes. ~~(If proposed BAAQMD CEQA Guidelines are adopted and in effect at the time of EIR certification, this measure shall supersede the condition in Mitigation Measure M-AQ-1b which limits idling to five minutes at any location other than a school.)~~

Page 6-17: The second paragraph under Mitigation Measure M-BI-1b is revised in response to Comment B12.

Where it is not possible to avoid temporary loss of riparian habitat in construction areas, the SFPUC shall fully restore the functions and services of these habitats onsite, which will include revegetation of all graded surfaces with locally native plant species, and revegetation of channel banks disturbed by construction. Disturbed streambeds shall also be restored. Site restoration shall be undertaken in accordance with a detailed restoration plan or plans prepared by a qualified restoration ecologist and shall be consistent with all required permits, and all planting material shall be pathogen-free. The SFPUC shall initiate mitigation actions as soon as possible. Restoration of temporary-use construction areas shall begin as soon as they are no longer needed. Habitat mitigation and enhancement at compensation sites shall begin as soon as possible after the project is approved and all permits are secured. The final habitat restoration plan or plans shall provide, at a minimum:

Page 6-17: The third item below the second paragraph of Mitigation Measure M-BI-1b is revised as follows in response to Comment B12.

Success Criteria. The final habitat restoration plan(s) shall include ecologically based criteria that will be used to determine whether the restoration projects are achieving their objectives (i.e., full restoration within five years). The success criteria shall be based on attributes that are objective and verifiable, such as percent survival of plantings or percent cover achieved by planted materials. The success criteria may include but not be limited to the following:

- Total areal extent of the wetland shall be as large as, or greater in size, than its design acreage.
- Total areal extent of vegetation shall comprise more than 50 percent total cover in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) wetland plant species.
- Invasive species shall not exceed 10 percent total cover.
- The hydroperiod shall provide, at a minimum, 30 days of inundation of the site but inundation shall not persist throughout the entirety of the dry season.

Page 6-18: The fourth paragraph of Mitigation Measure M-BI-1c and the following paragraph is added to augment the discussion requirements of the final MMP:

Fully compensate to achieve no net loss of habitat functions and services, as determined in consultation with natural resource permitting agencies, for operational impacts on 13.5 acres of wetland permanent impact, including 7.7 acres (1,357 linear feet) of riparian habitat by restoring and establishing wetlands and riparian habitat on or in the vicinity of the Peninsula watershed lands. The SFPUC shall mitigate for a minimum of 14.01 acres of wetlands. The final acreages will be determined in consultation with the permitting agencies, with further details specified in the MMPs. Mitigation for all potential impacts will be mitigated “up front,” in 2010–2012, at least three to four years in advance of potential operational impacts; depending upon timing associated with the increase in reservoir storage.

Advance mitigation of 14.01 acres of stable, diverse and managed wetlands completed prior to implementation of the proposed operations (see Draft EIR Volume 1, Chapter 5, Section 5.13, page 5.13-100) will help to ensure there is adequate compensation for the wetland impacts (both due to construction and operations)). The adequacy of the mitigation will be further assured because the preponderance of wetland mitigation sites will be in the same watershed or watersheds adjacent to where the impacts will occur, and accessible to the same species of plants and animals displaced as the reservoir reaches its new operating elevation. Other sites may be added as mitigation, as approved by the regulatory agencies. The proximity of impacted sites and areas where the replacement functions would be developed, and the continuity of land management, provides additional reassurance that the sites will be successful and would replace wetland functions and services.

Page 6-18: The last paragraph on this page under Mitigation Measure M-BI-1c is revised as follows.

Site Selection. The final compensation plan(s) shall include a description of the factors considered during the final mitigation site selection process, including consideration of watershed needs, ~~onsite alternatives,~~ and the practicability of accomplishing ecologically self-sustaining habitats at the mitigation sites. All sites selected must be known to support, or be able to support, breeding CRLF and SFGS, or as otherwise determined in consultation with natural resource permitting agencies, to compensate for impacted habitat functions and services.

Pages 6-19 to 6-21: Table 5.13-7 is revised as shown below based on the updated planning and development status of the biological resources mitigation projects. This table is also revised on pages 5.13-93 to 5.13-95 (Vol. 1, Chapter 5, Section 5.13).

Page 6-23: The following text revision is made to Mitigation Measure M-BI-1c.

Compensation Plan. The final MMPs shall specify the compensation for all habitat types addressed in the plan(s) needed to achieve no net loss of habitat areas, functions, and services, and the rationale ~~used to determine their sufficiency for selection~~. Factors considered in determining the adequacy of the compensation shall include:

Page 6-25: The fifth paragraph of Mitigation Measure M-BI-1c is revised to supplement the description of success criteria to be included in the MMP(s).

Success Criteria. ~~The final MMP(s) shall include~~ The success of the compensation sites will be assessed by comparing performance during the monitoring period against objective and verifiable, ecologically based success criteria for use in determining whether the compensation projects are achieving their objectives. The success criteria shall be based on attributes that are objective and verifiable which reflect the Goals and Objectives of the site. The type of language that will be included in the final MMPs under success criteria are described below. The final success criteria shall provide additional detail and specificity as needed to determine whether compensation objectives are achieved in accordance with resource agency permitting requirements.

For example, at year 5 these may include, but are not limited to:

- Total areal extent of the wetland shall be as large as, or greater in size, than its design acreage.
- Total aerial extent of vegetation shall comprise more than 50 percent total cover in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) wetland plant species.
- Invasive species shall not exceed 10 percent total cover.
- The hydroperiod shall provide, at a minimum, 30 days of inundation of the site but inundation shall not persist throughout the entirety of the dry season.

Page 6-27: The second paragraph under Mitigation Measure M-BI-3c is revised as follows.

..... The EI shall operate under the direction of a project environmental compliance manager and shall have one or more specialty environmental monitors on call, ~~with a valid permit to handle listed species~~ USFWS approval, as required, to handle listed species. The specialty monitor shall direct all personnel in regards to interactions with sensitive species, perform authorized species relocations, and supervise all reporting on such species.

TABLE 5.13-7 (Revised)
POTENTIAL MITIGATION PROJECTS, LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT

Site Code*	Name and Location	Type of Mitigation Available for LCSDI Project	Current Status of Site	Project Components
MS-1	Skyline Boulevard Approximately 5 acres at the northern portion of San Andreas Reservoir in the Peninsula watershed, west of the Skyline Boulevard and San Bruno Avenue intersection.	<ul style="list-style-type: none"> wetland habitat scrub habitat pond habitat 	Contains non-native pine and eucalyptus trees and non-native velvet grass and other non-native grasslands surrounded by native scrub habitat. A small seasonal wetland exists in the southern portion of the site where a paved fire road partially dams a small drainage. Site has been degraded by historical land uses and the presence of invasive non-native species.	<ul style="list-style-type: none"> Remove one acre of non-native eucalyptus and plant with scrub vegetation. Remove pine trees and other non-native vegetation and replace with <u>plant</u> scrub and seasonal wetland vegetation. Within the seasonal wetlands area, small ponds will be excavated. Construct seasonal wetlands and ponds in the native native grassland. Construct new access roads.
MS-2	San Andreas Reservoir Approximately 12 acres located on the northwest end of San Andreas Reservoir in the Peninsula watershed.	<ul style="list-style-type: none"> grasslands riparian habitat scrub habitat wetland habitat <u>pond habitat</u> 	Site is dominated by scrub and non-native grassland habitats which are abundant in the surrounding area.	<ul style="list-style-type: none"> Remove existing non-native grassland and scrub vegetation. Excavate and plant wetland vegetation in wetland and <u>pond</u> creation area. <u>Relocate</u> <u>improve</u> portions of existing fire road off of Skyline Boulevard. Install a concrete mat at a <u>dip</u> in the fire road for erosion control.
MS-3	Upper San Mateo Creek Approximately 3 acres located in the northwest portion of the Peninsula watershed approximately two miles northwest of Lower Crystal Springs Reservoir along Trousdale Boulevard.	<ul style="list-style-type: none"> wetland habitat grasslands <u>pond habitat</u> 	Contains stands of non-native pine trees surrounded by scrub habitat and non-native grasslands. Past development has degraded the site and facilitated the invasion of the non-native pines.	<ul style="list-style-type: none"> Remove non-native pine trees. Where pine trees are removed near existing seeps (southern portion of the site), ground disturbance would be limited to use of hand tools and tree stumps would not be removed. For wetland creation areas, excavate and grade to create wetland basins, <u>ponds</u> and swales. Construct inlet weirs and outlet structures in wetland creation areas. Remove one existing culvert. <u>Rehabilitate</u> second existing culverts that conveys water to San Mateo Creek. Utilize spoils from grading to construct berm on western side of wetland area along existing road. Plant native wetland vegetation in wetland area and native grassland species in upland areas; seed graded areas with an erosion-control mix.

TABLE 5.13-7 (Continued)
POTENTIAL MITIGATION PROJECTS, LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT

Site Code*	Name and Location	Type of Mitigation Available for LCSDI Project	Current Status of Site	Project Components
MS-4	Skyline Quarry <u>Approximately 2 acres located North of Highway 92 in the western portion of the Peninsula watershed, and adjacent to the Fifield-Cahill Ridge Trail trailhead.</u>	<ul style="list-style-type: none"> • riparian habitat • scrub habitat • wetland habitat 	Contains trailhead, parking lot, restroom facilities, an unnamed intermittent stream channel, its active floodplains, and portions of adjacent upland landforms within the footprint of a former quarry. Past mining activities and invasion of non-native pampas grass on the site have degraded seasonal wetland and riparian habitat.	<ul style="list-style-type: none"> • Remove non-native pampas grass using mechanical and manual methods and herbicides. • Excavate mine tailings and plant with native wetland scrub vegetation. • Replace existing culvert located southwest of riparian enhancement area and replace culvert at a higher elevation. • Enhance riparian through grading and planting of riparian vegetation. • Reduce size of existing parking lot and relocate trailhead and restroom facilities.
MS-5	Adobe Gulch Creek South <u>Approximately 3 acres in the southwestern portion of the Peninsula watershed.</u>	<ul style="list-style-type: none"> • woodlands • wetland habitat • riparian habitat 	Contains 3 acres of non-native eucalyptus trees adjacent to Adobe Gulch Creek and some riparian vegetation.	<ul style="list-style-type: none"> • Remove vegetation, excavate and grade a shallow depression, and plant native wetland vegetation in wetland creation area. • Install outlet channel to drain proposed wetland into Adobe Gulch Creek. • Stabilize Adobe Gulch Creek stream bank using bioengineering methods and planting native riparian trees and shrubs. • In oak woodland creation and enhancement area, remove up to 3 acres of selected eucalyptus trees. Grade and hydroseed tree removal area. • Plant oak trees and install temporary browse protection fencing. • <u>Relocate existing staging areas further from riparian habitat.</u>
MS-6	Boat Ramp North <u>Approximately 0.5 acre located Directly upslope of the existing access road to a SFPUC boat launch west of Skyline Boulevard in the eastern portion of the Peninsula watershed next to Lower Crystal Springs Reservoir, about ½ mile north of Highway 92.</u>	<ul style="list-style-type: none"> • wetland habitat 	Contains a seasonal wetland formed by the impoundment of runoff by the roadway embankment.	<ul style="list-style-type: none"> • Excavate grasslands and remove non-native vegetation near existing seasonal wetlands. • Raise access road to improve drainage and replace existing culvert with a larger culvert to provide for wildlife passage. • Plant native wetland vegetation.
MS-7	Adobe Gulch <u>Approximately 60 acres near Highway 92 in the southwestern portion of the Peninsula watershed, on the west side of Upper Crystal Springs Reservoir.</u>	<ul style="list-style-type: none"> • oak woodland • wetland habitat • <u>pond habitat</u> • <u>riparian</u> 	Largely consists of scrub habitat, coyote brush, poison oak, and small trees.	<ul style="list-style-type: none"> • Remove poison oak and coyote brush using mechanical means, goat grazing, manual removal, and/or herbicides. • Remove non-native cypress trees and plant oak trees within tree removal area. • Install temporary browse protection, irrigation pipeline and

TABLE 5.13-7 (Continued)
POTENTIAL MITIGATION PROJECTS, LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT

Site Code*	Name and Location	Type of Mitigation Available for LCSDI Project	Current Status of Site	Project Components
				<p>water storage tank for new oak trees.</p> <ul style="list-style-type: none"> Remove or modify existing access roads and construct a new permanent access road. For wetland creation area, remove vegetation, excavate shallow depressions, and plant native wetland vegetation, and replace existing abandoned road with ephemeral and intermittent drainage and riparian habitat. Decommission existing access road within riparian habitat and ephemeral and intermittent drainage, restore area, relocate road to less impactive area.
MS-8	Boat Ramp South <u>Approximately 28 acres Adjacent to Skyline Boulevard in the eastern portion of the Peninsula watershed next to Lower Crystal Springs Reservoir, about ¼ mile north of Highway 92.</u>	<ul style="list-style-type: none"> woodlands wetland habitat riparian habitat scrub habitat grasslands 	Contains non-native pine trees, grasslands, and shrubs.	<ul style="list-style-type: none"> Remove non-native pine trees. Plant fountain thistle and native grassland species. Manage fountain thistle enhancement and grassland areas through tree and brush control, active seeding, or out-planting of fountain thistle and butterfly host species.
MS-9	Half Moon Bay / Pilarcitos <u>Approximately 15 acres in the City of Half Moon Bay, adjacent to and south of Highway 92, within the historic floodplain of Pilarcitos Creek.</u>	<ul style="list-style-type: none"> wetlands/pond riparian habitat 	Currently used as a corporation yard for Half Moon Bay Public Works. The site contains agricultural plots covered in black plastic tarp that are surrounded by irrigation ditches and gravel roads, which are all remnants of the former ornamental plant nursery at the site. The site also contains buildings and structures that appear to be older than 50 years—the minimum age threshold for potential eligibility for the National Register of Historic Places.	<ul style="list-style-type: none"> Remove existing structures, concrete pad, and paved and gravel roadways. Remove non-native vegetation. Excavate pond area to capture runoff, and regrade site. Install temporary irrigation. Plant riparian plants.
MS-10	Sherwood Point <u>Approximately 3 acres located on the southern terminus of Portola Road on the northern end of Lower Crystal Springs Reservoir.</u>	<ul style="list-style-type: none"> oak woodland wetland habitat 	Currently comprised of non-native eucalyptus, needle grass grassland, non-native grassland, 2 small seasonal wetlands and barren ground.	<ul style="list-style-type: none"> Remove non-natives along Sherwood Pt that are encroaching into adjacent native habitats. Restore native oak woodland. Creation of seasonal wetland along the fringe of the reservoir.

*See Figure 5.13-4 for the location of sites.

Page 6-27: The second paragraph under Mitigation Measure M-BI-3f is revised in response to Comment B7.

If the minimum fencing distance cannot be achieved and the middens cannot be protected and/or avoided, a qualified biologist shall disassemble middens, or, if adjacent habitat is not suitable, trap and relocate woodrats out of the construction area (using live traps) prior to the start of construction. In addition, the biologists shall attempt to relocate the disassembled midden to the same area where the woodrats are released. If young woodrats are present during disassembling, the biologists shall discontinue disassembling and return at least 2448 hours later to allow time for the young to be relocated. The midden may not be fully disassembled until the young have left.

Page 6-28: The following text is appended to Mitigation Measure M-BI-7a in response to comments requesting additional detail on proposed mitigation (see the discussion under the heading, *Development of a Mitigation Plan for Special-status Plants and Serpentine Habitats*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document)

The monitoring plan for serpentine habitats under Mitigation Measures M-BI-7a and for special-status species under Mitigation Measure M-BI-8a shall include the following elements listed below:

Mitigation Goals and Objectives. Fully mitigate to achieve no net loss of habitat functions and services, as determined in consultation with natural resource permitting agencies, for impacts on special-status plant and serpentine habitats. The SFPUC shall mitigate for all potential inundation impacts "up front", in advance of potential operational impacts and depending upon timing associated with the increase in reservoir storage.

Site Selection. The final mitigation plan(s) shall include a description of the factors considered during the final mitigation site selection process, including consideration of alternative sites and the practicability of accomplishing ecologically self-sustaining habitats at the mitigation site(s).

Site Protection Instrument. The final mitigation plan(s) shall include a description of the legal arrangements and instruments, including site ownership, used to ensure the long-term protection of the mitigation sites.

Baseline Information. The final permits shall include descriptions of the ecological characteristics of the impact sites and their associated proposed mitigation sites. The MMP shall include descriptions of existing plant communities, existing hydrology, soil conditions, a map showing the locations of the mitigation sites, and other site characteristics as needed.

Mitigation Plan. The final MMPs shall specify the mitigation for all impacted resources addressed in the plan(s) needed to achieve no net loss of habitat functions and services, and the rationale used to determine their sufficiency. Factors considered in determining the adequacy of the mitigation shall include:

- The quality of the affected habitat compared with the potential of the mitigation site;
- The similarity of the mitigation site to the affected habitat in terms of site potential (soil, topographic, and hydrologic characteristics) and proposed vegetation composition and structure;
- The timing of mitigation site development in relation to the anticipated loss of existing habitat;
- The connectivity of proposed mitigation habitat with existing, occupied habitat;
- The likelihood of success of the proposed enhancement actions;
- The differences between the habitat functions and services lost and those expected to be provided by the mitigation;
- Temporal losses of resource functions and services;
- The difficulty of restoring or establishing the desired habitat types and functions; and
- The distance between the affected habitat and mitigation sites.

Mitigation Work Plan. The final MMP(s) shall include detailed written requirements and work descriptions for the mitigation projects, including but not limited to: the geographic boundaries of the projects; timing and sequence; methods for establishing the desired plant communities; plans to control invasive plants and herbivory.

Maintenance Plan. The final MMP(s) shall include a description and schedule of maintenance requirements to ensure the continued viability of the habitats once initial installation is completed.

Success Criteria and Contingency Actions. The final MMP(s) shall include ecologically based criteria for use in determining whether the mitigation projects are achieving their objectives. The success criteria shall be based on attributes that are objective and verifiable, such as percent cover, stem count, or health and vigor of plants. The MMPs will describe actions to be taken if success criteria are not met. Please see the subsection entitled *Success Criteria and Contingency Planning*, below, for more detail.

Monitoring Plan. The final MMP(s) shall include a description of parameters to be monitored to determine whether the mitigation projects are on track to meet success criteria. A schedule for monitoring and reporting on monitoring results must be included. Monitoring and reporting shall continue for five years, or the length of time required by regulatory agencies.

Long-Term Management Plan. The final MMP(s) shall describe how the mitigation sites will be managed after the success criteria have been achieved to ensure the long-term sustainability of the resources, including long-term financing mechanisms and the party responsible for long-term management. Such management will be dictated by periodically examining the performance of the mitigation sites relative to measurable ecological parameters, not as success criteria but as a way of comparing the health of the sites from year to year.

Adaptive Management A decrease in health or vigor of the communities or target species populations at the mitigation sites (such as an insect or weed infestation, disease, or severe herbivory) would trigger corrective actions such as control methods (i.e., hand-pulling weeds, targeted spraying of pathogens), and, if necessary, planting.) The success (or failure) of these actions would form the basis for adaptive management, whereby the maintenance of the resource would improve over time.

Page 6-33: The first paragraph of Mitigation Measure M-BI-8a is revised in response to comments requesting additional detail on the proposed mitigation at the Fountain Thistle Management Area (see the discussion under the heading, *Identification of a Mitigation Area for Special-status Plants and Serpentine Habitats*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

Mitigation Measure M-BI-8a: Listed and Nonlisted Special-status Plants

This mitigation measure shall be carried out in conjunction with Mitigation Measure M-BI-7a. Mitigation for impacts on 0.30 acre of fountain thistle and 0.002 acre of Marin western flax shall be carried out at a specific site with the potential to support these species, as determined by a qualified biologist. An example would be the ~~Boat Ramp South site~~ Fountain Thistle Management Area described above in Table 5.13-7. At the selected mitigation site, surveys for fountain thistle and Marin western flax will be carried out at an appropriate time of year and any populations found will be avoided. In addition, the serpentine bunchgrass habitat in the Fountain Thistle Management Area would be managed to enhance habitat for Crystal Springs lessingia. Habitat would be replaced to achieve no net loss of habitat functions and services for the species, as determined in consultation with natural resource permitting agencies...

Page 6-33: The following text is appended to the last paragraph of Mitigation Measure M-BI-8a to include a cross-reference to Mitigation Measure M-BI-7a.

Refer to Mitigation Measures M-BI-7a for the monitoring plan for special-status species under Mitigation Measure M-BI-8a.

Page 6-33: The last paragraph of Mitigation Measure M-BI-8a is deleted and the following text is added to describe the proposed stepwise implementation of mitigation for special-status plants (see the discussion under the heading, *Stepwise Implementation of Mitigation Actions in Advance of Operational Impacts – Fountain Thistle, Marin Western Flax, and Crystal Springs Lessingia*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

~~All habitat improvements shall be carried out prior to the implementation of the increased maximum normal reservoir operating elevation. For the first five years following the reservoir elevation reaching a sustained operating maximum of 29–87.8 feet, the SFPUC shall carry out annual surveys to determine the effectiveness of the habitat improvements.~~

The SFPUC shall implement a stepwise plan to first compensate for a portion of the anticipated impacts prior to the loss of fountain thistle, Marin western flax, and Crystal Springs lessingia, and then to allow the reservoir to rise according to the proportion of impacts compensated. The next portion of anticipated impacts will be compensated, followed by another incremental rise in the reservoir.

The methods for determining the mitigation values shall be based on a baseline and a determination of assessment methods developed with the approval of the resource agencies. This approach will ensure no net loss of functions and services. Once the replacement criterion has been fully met, the SFPUC shall be permitted to raise the reservoir to its proposed maximum normal water level.

Prior to each successive incremental increase in maximum water level, the SFPUC shall conduct a survey of the mitigation area to determine if a sufficient number of individuals are present to allow for additional inundation. Documentation of plant numbers shall be provided to the USFWS and CDFG prior to raising the maximum water level by an additional foot.

The SFPUC shall remove and control exotic plants to improve habitat conditions adjacent to areas containing target native plant species. To facilitate recolonization, salvaged seed may be sown in areas where habitat is deemed to be restored. Transplantation will be considered only as a contingency action in the case that success criteria are not otherwise achieved.

Page 6-33: The following text augments Mitigation Measure M-BI-8a and follows the added text in the preceding text revision (see the discussion under the heading, *Implementation of Mitigation Actions in Advance of Operational Impacts – Franciscan Onion, San Francisco Collinsia, and Western Leatherwood*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document)

The acreage and the number of western leatherwood, San Francisco collinsia and Franciscan onion plants affected is relatively small, and each of these species occurs at multiple locations around Crystal Springs Reservoir. The mitigation proposes to enhance several of the reasonably accessible populations around the reservoir through strategies such as reduction in competition and other habitat enhancement.

Franciscan onion grows on clay soils in grasslands and at the edges of serpentine chaparral and hardwood forest, often in association with serpentine substrate. Reported populations are relatively small. The proposed mitigation for this species shall consist of reducing competition in and near two existing populations, ALLI_01 (see Appendix I, page I-221); and ALLI_05 ((see Appendix I, page I-234). Reducing competition would consist of hand-removing non-native exotics such as Mediterranean grasses and yellow star thistle, and cutting down tree and brush that overshadow the Franciscan onion. Habitat enhancement would be carried out above the 287.8 foot elevation, extending as far upslope as suitable habitat is present, up to 0.02 acre.

San Francisco collinsia grows on steep, north-facing oak woodlands. It is weakly associated with serpentine substrates. One population (COLL_03, Appendix I page I-226) is situated below a maintained service road on the east side of Crystal Springs Reservoir. Most of the population is above the 291.8 foot elevation (Leitner, 2010). Mitigation for this species shall consist of salvaging the seed from the portion of the population that would be impacted by the rise in the reservoir elevation and sowing them upslope in suitable habitat, monitoring for and removing competing understory plants, enhancing up to 0.01 acre.

Western leatherwood occurs in many localities on the Peninsula watershed, usually in very small colonies consisting of one or a small number of individuals. It is most often found in coastal scrub. It does not appear to grow from seed as readily as it propagates vegetatively from the root crown (Foree, 2010). It sometimes appears to be light-starved due to coast live oaks overtopping the coastal scrub (Leitner, 2010). Mitigation for this species shall consist of removing light competition by removing senescent woody vegetation from the populations around Tracy Lake and elsewhere, enhancing habitat for up to 0.09 acre or 28 individuals. If this does not provide a sufficient quantity of mitigation, habitat enhancement shall be carried out in connection with the fuel management program on the watershed, where western leatherwood shall be enhanced by removing competing woody vegetation.

Page 6-33: The following text augments Mitigation Measure M-BI-8a and is added to follow the additional text revised in the section above (see the discussion under the heading, *Success Criteria*, in Section 4.17-2, Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation, of this Comments and Responses document).

In general, mitigation is planned for areas in or near occupied habitat for one or more special-status plant species. The relative abundance of target species in a given mitigation site will be based on an increase over the *baseline population*, which would be determined by a baseline survey of the mitigation site as well as a reference site located nearby in similar ecological conditions. Many of the target species are annuals or short-lived perennials whose populations may fluctuate considerably from year to year based on weather conditions or other natural variables. Annual adjustments to the quantity of the baseline population shall be made using the variation observed in the *reference population*.

For example, if the success criterion for target species A is an increase of 100 plants and the baseline population is 400 plants in the baseline survey in 2010, the target population is 500 plants. However, if the reference population in 2012 has declined by 10 percent, then the baseline population would be adjusted to 360 plants (400 plants x 90 percent) and the target would be adjusted to consist of an increase in 90 plants (100 plants x 90 percent). Thus, the target population for 2012 would be 450 plants (baseline 360 plants plus adjusted increase of 90 plants = 450 plants). Some of the details of the determination of success criteria will be developed in consultation with the resource agencies, such as whether the population criterion will be based on the total number of individuals, or the number of flowering individuals. This may vary by species.

The preferred site for mitigation for fountain thistle, Marin western flax, and Crystal Springs lessingia is the Fountain Thistle Management Area (FTMA). As shown in Figure 5.13-5, this site supports or is very near known populations of these three special-status species. For the three other species requiring mitigation, western leatherwood, Franciscan onion, and San Francisco collinsia, mitigation actions shall be carried out elsewhere on SFPUC Peninsula watershed lands, as described above. The alternate sites are in proximity to extant populations of the target species

The primary approach to mitigation for special-status plants is the creation, enhancement, or restoration of habitat near existing populations, with the reasonable anticipation that the plants will colonize suitable habitat. Sowing of such sites with seed salvaged from impact sites may be employed, where feasible, to speed up the colonization process. Transplanting is not a preferred approach, in large part because it tends to be less successful, in the long-term, than habitat creation, and requires ongoing care while plants become established, something that often results in high mortality rates. Thus, although transplantation is not a strategy in mitigation for this project, it may be employed as a contingency action if success criteria are not readily met.

Franciscan onion. Since the area predicted to be impacted is 0.02 acre, two-thirds of the total area occupied by Franciscan onion in the project area, it is assumed that the number of individuals potentially impacted is two-thirds of the total number of individuals (214), or 143 plants. Therefore, the success criterion is an increase of 143 Franciscan onion plants over the baseline, and/or an increase in occupied habitat of 0.02 acre. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

Fountain thistle. The success criterion for this species is an increase of fountain thistle plants over the baseline and/or an increase in occupied habitat equal to that lost to inundation. This could be up to 8,024 fountain thistle individuals and 0.30 acre of occupied habitat, but could be less if impacts are less than predicted. Mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.075 acre and/or 2,006 individuals. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

San Francisco collinsia. Since the area predicted to be impacted is 0.01 acre and an unknown number of individuals, the success criterion is an increase in occupied habitat of 0.01 acre prior to the rise in reservoir elevation. The increased population must persist through the full rise in reservoir elevation plus an additional five years.

Western leatherwood. The success criterion for western leatherwood is the establishment or significant enhancement in the vigor of up to 28 leatherwood plants above the reference population. The increased or enhanced population must be realized prior to the rise in reservoir elevation and persist through the full rise in reservoir elevation plus an additional five years.

Marin western flax. The predicted impact on Marin western flax is 0.002 acre and an unknown number of individuals. The success criterion is, therefore, an increase in occupied habitat of 0.002 acre. This mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.0005 acre. The increase in occupied habitat must persist through the full rise in reservoir elevation plus an additional five years.

Crystal Springs lessingia. The predicted impact on Crystal Springs lessingia is 2.59 acre and an unknown number of individuals. The success criterion is, therefore, an increase in occupied habitat of 2.59 acres. This mitigation may be carried out in a stepwise fashion, with one-fourth of mitigation to be completed before each one-foot rise in the allowed maximum reservoir operating elevation, or 0.65 acre. The increase in occupied habitat must persist through the full rise in reservoir elevation plus an additional five years. As an alternative to the use of occupied acreage as a measure of success, population numbers may be used to compare the number of plants impacted to the increase in mitigation management areas. The reference population would then be used to demonstrate that the proportion of increase in plants in a given year is attributable to management actions as opposed to natural fluctuation.

Page 6-34: The following text is added to the last sentence in the first paragraph of Mitigation Measure M-BI-8a.

Removal of non-native trees, together with the predicted change in hydrology, will create suitable mitigation habitat. Increased habitat for Marin western flax is expected to form where non-native woodland and accumulated litter and duff on serpentine soil are removed and grassland restored to the site. Enhanced and restored occupied habitat shall be equal in extent to the predicted loss of habitat below the 291.8-foot elevation, or as otherwise approved by the regulatory agencies.

Page 6-39: Under Mitigation Measure M-HY-3, the third bullet under the heading *e. Tracking Controls* is revised as follows.

- Install a facility at the site access to allow for tire washing when vehicles exit the site. This item may be omitted if the RWQCB determines vacuum sweepers per Mitigation Measure M-AQ-1a, or other relevant mitigation measures are sufficient to avoid tracking of dirt.

Page 6-39: Under Mitigation Measure M-HY-3, fourth bullet under the heading *f. In-Stream – Construction BMPs* is revised as follows.

- Place by hand any physical barriers within lower San Mateo Creek to isolate the construction area for dewatering purposes or control of construction-related stormwater discharges (erosion and sediment control), avoiding the use of vehicles in the creek channel, and carry out the barriers under guidance of a qualified fish biologist to ensure avoidance and minimization of stress, injury, or mortality to aquatic wildlife

Page 6-39: Under Mitigation Measure M-HY-3, second to last bullet under the heading *f. In-Stream – Construction BMPs* is revised in response to Comment H3.

- In the event that construction activities create a visible plume in surface waters, initiate monitoring of turbidity concentrations at the discharge site and ~~300~~50 feet downstream while the visible plume persists and initiate corrective action to reduce construction-related turbidity to be in accordance with turbidity criteria specified in the Basin Plan for coldwater fish habitat beneficial use, as measured in surface waters ~~300~~50 feet downstream of the working area. Corrective actions shall also be implemented as needed to ensure construction activities are within the Basin Plan's surface water quality objective for turbidity, which states that turbidity increases shall not be greater than 10 percent in areas where natural turbidity is greater than 50 nephelometric turbidity units (NTU).

Page 6-40: Under Mitigation Measure M-HY-3, second bullet under the heading *h. Waste Management and Hazardous Materials Pollution Control* is revised in response to Comment H3.

- Locate sanitary facilities a minimum of 300 feet from San Mateo Creek and away from curbs and storm drains

Page 6-41: Under Mitigation Measure M-HY-3, the last two bullets under the heading *j. Permitting Monitoring and Reporting* is revised as follows.

- Notify the RWQCB, CDFG, U.S. Fish and Wildlife Service, ~~National Marine Fisheries Service,~~ and other agencies as required (e.g., CDFG and USFWS) if the criteria for turbidity, oil/grease, or foam are exceeded and undertake corrective actions
- Notify the RWQCB, CDFG, U.S. Fish and Wildlife Service, ~~National Marine Fisheries Service,~~ National Marine Fisheries Service, and other agencies as required (e.g., CDFG and USFWS) immediately of any spill of petroleum products or other organic or earthen materials and undertake corrective action

Page 6-45: Mitigation Measure M-MS-AQ-1 is deleted because prescribed burns for either construction or operations would no longer occur as part of the mitigation requirements for biological resources.

Prescribed Burn Limits

~~**Measure M-MS-AQ-1:** For mitigation projects that involve the use of prescribed burns for either construction or operations (e.g., San Andreas Reservoir, Upper San Mateo Creek, or Adobe Gulch, sites MS-2, 3, and 7, respectively), the SFPUC shall ensure that prescribed burns are limited to approximately three acres per day or an appropriate acreage to ensure that emissions rates do not exceed the Bay Area Air Quality Management District significance thresholds for criteria pollutants.~~

Page 6-46: Mitigation Measure M-MS-HY-1 is deleted because prescribed burns for either construction or operations would no longer occur as part of the mitigation requirements for biological resources.

~~Prescribed Burn Use of Best Management Practices for Protection of Water Quality~~

~~Measure M-MS-HY-1:~~ For mitigation projects that involve the use of prescribed burns for either construction or operations (e.g., San Andreas Reservoir, Upper San Mateo Creek, or Adobe Gulch, sites MS 2, 3, and 7, respectively), the SFPUC shall include BMPs for water quality protection as part of prescribed burn planning. The SFPUC will specifically plan all prescribed burns to control erosion after the burn to prevent sediment runoff into streams, reservoirs, and wetlands, including measures, for example, to select fire line locations and consider weather, fuel, soil, and topographic conditions; to avoid intense burns that remove forest floor litter; to avoid burning piles of slash in riparian management zones; and to use natural or existing barriers (e.g., roads, streams, lakes) where possible. BMPs following a prescribed burn include using erosion control measures for fire lines that could erode soil into lakes, streams, and wetlands; revegetation; and the installation of water bars.

Pages 6-47: Mitigation Measure M-MS-HZ-3 is deleted because prescribed burns for either construction or operations would no longer occur as part of the mitigation requirements for biological resources.

~~Prescribed Burn Measures~~

~~Measure M-MS-HZ-3:~~ For mitigation projects that involve the use of prescribed burns for either construction or operations (e.g., San Andreas Reservoir, Upper San Mateo Creek, or Adobe Gulch, sites MS 2, 3, and 7, respectively), the SFPUC shall implement the following measures to reduce the risk of hazards associated with wildland fires.

~~Prescribed Burn Planning.~~ To manage the use of prescribed burns, the SFPUC will designate a qualified fire manager to oversee all burn operations. All prescribed burns will have a defined burn plan. The fire manager will determine what type of plan is necessary, and the plan will be subject to his/her approval. Burn plan components will include, but are not limited to, crew size and qualifications, health and safety measures, pre burn site preparation, onsite equipment, ignition method, medical plan, contingencies, emergency contacts, smoke management, and holding, patrol, and mop-up standards.

The SFPUC fire manager will ensure containment measures are developed and implemented prior to the start of prescribed fire burns. Fire control lines will be constructed around the perimeter of the area to be burned, and extra suppression resources will be made available during the burning operation. In addition, a contingency plan will be developed prior to burning to account for possible emergencies. Burning will be monitored and limited so that acceptable levels of air quality are not exceeded.

The SFPUC will ensure that burns are not left unattended at any time and are monitored until they are out. Cleanup actions will be completed before the prescribed burn crews leave the defined burn area, as defined in the prescribed burn plan. The burn area will be inspected the morning following a prescribed burn. The SFPUC fire manager will make the required notifications regarding the completion of a prescribed burn.

Revisions to Volume 1, Chapter 7, Other CEQA Issues

Page 7-8: The footnote at the bottom of Table 7-1 is revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

TABLE 7-1 (Revised)
SUMMARY OF CUMULATIVE IMPACTS

Cumulative Impact ^a	Significance Determination
Impact C-LU: Cumulative disruption of established communities and changes in existing land use patterns.	LS
Impact C-AE: Cumulative impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the sit and its surroundings.	LS
Impact C-CP: Cumulative impacts on cultural resources.	SU
Impact C-PH: Cumulative impacts on population and housing.	N/A
Impact C-TR: Cumulative traffic increases on local and regional roads.	PSM
Impact C-NO: Cumulative increases in construction noise in the LCSD vicinity and along construction haul and delivery routes.	PSU
Impact C-AQ: Cumulative air quality impacts	LS/SU ^b
Impact C-WS: Cumulative impacts on wind and shadow.	N/A
Impact C-RE: Cumulative effects on recreational resources during construction.	SU
Impact C-UT: Cumulative effects on utilities and service systems.	N/A
Impact C-PS: Cumulative impacts on public services.	N/A
Impact C-BI: Cumulative loss of sensitive biological resources during construction and operation	PSM
Impact C2-BI: Cumulative impacts on fisheries.	LS
Impact C-GE: Cumulative impacts on geology, soils, and seismicity.	LS
Impact C-HY: Cumulative impacts on water quality and hydrology.	LS
Impact C-HZ: Cumulative impacts related to hazards and hazardous materials.	LS
Impact C-ME: Cumulative impacts on energy use.	LS
Impact C-AG: Cumulative impacts on agricultural resources.	N/A

B = Beneficial impact

N/A = Not Applicable or no impact

LS = Less than Significant impact, no mitigation required

SM = Significant impact, can be Mitigated to less than significant

PSM = Potentially Significant impact, can be Mitigated to less than significant

SU = Significant Unavoidable impact

PSU = Potentially Significant Unavoidable impact

^a All cumulative impacts apply only to the LCSD site, with the exception of Impacts C-AQ and C-BI which also apply to the Sampling Station #5 site. All other cumulative impacts at the Sampling Station #5 site are less than significant.

^b For all Air Quality impacts, two significance determinations are provided. The first determination is based on evaluation with the adopted 1999 BAAQMD guidelines and the second is based on the evaluation with the 2010 proposed 2009 BAAQMD CEQA Air Quality Guidelines.

Page 7-10: The third and fourth bullet points are revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

- Significant and unavoidable air quality impacts would result from construction-related emissions of engine exhaust (CO and ozone precursors) when evaluated under the 2010 proposed BAAQMD CEQA Guidelines (~~expected to be adopted in early 2010~~). Even with implementation of available mitigation measures (Mitigation Measures M-AQ-1b and M-AQ-1c), the project's construction emissions would exceed the 2010 proposed BAAQMD significance threshold for an ozone precursor (NOx). However, under the BAAQMD's 1999 adopted guidelines (~~1999~~), the project's equipment exhaust emissions are considered potentially significant, but would be mitigated to a less-than-significant level with implementation of BAAQMD-recommended exhaust control measures (Mitigation Measure M-AQ-1b) (see Section 5.8, Impact AQ-1).
- Under the BAAQMD's 2010 proposed significance threshold for NOx, significant and unavoidable cumulative impacts associated with construction-related air quality would occur because the project would cumulatively contribute to the region's nonattainment status for ozone. Although implementation of Mitigation Measure M-AQ-1b (Exhaust Control Measures) and M-AQ-1c (Additional Exhaust Control Measures) would help to reduce the project's individual contribution to NOx emissions, even at the project level, these emissions would remain significant and unavoidable. However, under the adopted 1999 BAAQMD guidelines, the LCSDI project's incremental contribution to nonattainment of ozone and suspended particulates would be reduced to a less-than-significant level with implementation of dust and exhaust control measures (Mitigation Measures M-AQ-1a and M-AQ-1b); therefore, the LCSDI project's contribution to cumulative air quality impacts related to emissions of ozone, PM10, and PM2.5 would not be cumulatively considerable and would be less than significant (see Section 5.8, Impact C-AQ).

Page 7-12: The fourth bullet under Section 7.3.2 is revised to correct a typo.

.....The lead agency, however, will update this EIR to be consistent with the Calaveras Dam Replacement Project Final EIR if the Calaveras document is certified prior to finalizing this EIR. Certification of the Calaveras Dam Replacement Project EIR is scheduled for July 2010.

Revisions to Volume 1, Chapter 8, Alternatives

Page 8-6: The last two bullet points are revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

- **Air Quality.** Significant and unavoidable air quality impacts would result from construction-related emissions of engine exhaust that would exceed the significance threshold proposed by the Bay Area Air Quality Management District's (BAAQMD) 2010 significance threshold for an ozone precursor, even with the implementation of

mitigation measures (Impact AQ-1, SU). (Refer to discussion under Potentially Significant Mitigable and Significant Mitigable Construction Impacts, below, regarding Impact AQ-1 under ~~1999adopted~~ BAAQMD thresholds.)

- **Cumulative Air Quality.** Significant and unavoidable cumulative air quality impacts associated with construction-related emissions would occur, based on BAAQMD's ~~2010proposed~~ significance thresholds, because implementation of the project would result in a cumulatively considerable contribution to exceedance of nitrogen oxides thresholds and to the region's nonattainment status for ozone, even with the implementation of mitigation measures (Impact C-AQ, SU). (Cumulative air quality impacts associated with construction related emissions would be less than significant under BAAQMD's ~~1999adopted~~ thresholds.)

Page 8-8: The second bullet point is revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

- **Air Quality.** Potentially significant air quality impacts would result from construction-related dust emissions, which are considered by BAAQMD to be significant unless mitigated, and from emissions of engine exhaust that would exceed the BAAQMD's ~~1999adopted~~ significance thresholds for an ozone precursor (Impact AQ-1, PSM), but would be mitigated to a less-than-significant level with implementation of BAAQMD-recommended dust control measures (Mitigation Measure M-AQ-1a) and BAAQMD-recommended exhaust control measures (Mitigation Measure M-AQ-1b). (Refer to discussion under Potentially Significant Unavoidable and Significant Unavoidable Construction Impacts, above, regarding Impact AQ-1 under ~~2010proposed~~ BAAQMD thresholds.

Page 8-14: The third full paragraph is revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

Under ~~2010proposed~~ BAAQMD significance thresholds, project construction would result in significant and unavoidable air quality impacts (Impacts AQ-1 and C-AQ), because estimated emissions from construction equipment and vehicles would generate levels in excess of the proposed BAAQMD CEQA significance thresholds for nitrogen oxides, a precursor for ozone. Even with implementation of Mitigation Measure M-AQ-1b (Exhaust Control Measures) and Mitigation Measure M-AQ-1c (Additional Exhaust Control Measures), emissions from project construction activities would result in significant direct and cumulative impacts, exceeding the nitrogen oxide thresholds, particularly since the project is located within a designated nonattainment region for ozone. As described above, an intensive nine-month construction period is proposed for project implementation, and it would not be feasible to reduce the amount of construction equipment (in order to lower the exhaust emission levels) and still complete project construction within nine months. Therefore, there are no feasible construction strategies to avoid or lessen these significant air quality impacts under the proposed BAAQMD thresholds. Under BAAQMD's ~~1999adopted~~ CEQA thresholds, Mitigation Measures M-AQ-1a and M-AQ-1b would reduce the proposed project's potentially significant

construction impacts (Impact AQ-1) to a less-than significant level; the project's contribution to cumulative impacts would be less than significant without mitigation.

Page 8-28: Table 8-1 is revised to reflect the BAAQMD's adoption of new CEQA Guidelines on June 2, 2010.

TABLE 8-1 (Revised)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS
OF THE CEQA ALTERNATIVES

Category of Significant Environmental Impact	Proposed Project (all impacts at LCSD site unless otherwise stated)	No Project Alternative	Lowered Spillway Crest Alternative
Air Quality	<ul style="list-style-type: none"> PSM impact from nitrogen oxide levels from exhaust emissions exceeding 1999 adopted BAAQMD thresholds; SU impact from nitrogen oxide levels from exhaust emissions exceeding BAAQMD's 2010 proposed thresholds SU cumulative impact from exhaust emissions contributing to regional nonattainment status for ozone under BAAQMD's 2010 proposed thresholds (LS under 1999 adopted thresholds) 	<p>All impacts avoided</p> <p>Potential for secondary construction and operational impacts if SFPUC and/or its customers seek supplemental water supplies and would depend on the type and location of the water source</p>	Same as proposed project

Revisions to Volume 1, Chapter 9, EIR Authors and Consultants

There are no text revisions to Chapter 9, EIR Authors and Consultants, of the Draft EIR.

Revisions to Volume 2, Appendices A through H

Appendix G, Historic Context, Architectural and Archaeological Resources Report, pages F-29 and F-30: The report is revised in response to Comment C5.

2.2.2 Mission San Francisco (1776-1833)

After the establishment of Mission San Francisco in 1776, the lands of the San Francisco peninsula came under control of the church. In the San Pedro Valley, west of the APE, an agricultural and ranching outpost was established in 1786 on a former indigenous village site. Such enterprises were operated by Native American "neophytes," who were brought to the missions by a combination of attraction techniques and the frequent use of violence by Spanish soldiers to keep rebellious tendencies under control. The techniques used to attract the Indians (new foods, new animals, new technology, new religious rites, grand buildings and new clothes, beads and other personal items), were important, but so was the coercion.

The resulting mission system was a combination of feudal religious commune and ~~slavery~~ forced labor, whose Indian inmates were the ~~slave-unpaid~~ laborers and the Spanish were the ruling class. Poor working conditions and lack of resistance to European diseases led to frequent epidemics, which struck the San Pedro settlement in 1791 and led to its abandonment soon thereafter.

... The other ranchos in the area were granted in the 1840s. The 6,000 acre Rancho San Mateo, in the northwest portion of the project area, had previously been held in reserve by the government as a potential zone for resettlement of Native Americans. As occurred during the Mission Period described above, Native Americans were also mistreated during the Mexican Period and Early American Periods.

The reference citation of this cultural resources report, found on Draft EIR page 5.5-33 (Vol. 1, Chapter 5, Section 5.5), has been amended as follows to reflect these changes to the text of the report:

ENTRIX/MSE JV, Final Historic Context, Architectural and Archaeological Resources Inventory Report for the Proposed Lower Crystal Springs Dam Improvement Project. Prepared for the San Francisco Public Utilities Commission, 2009-(as amended, 2010).

Revisions to Volume 3, Appendices H through M

There are no revisions to Appendices H through M of the Draft EIR.

5.3 Revised Draft EIR Figures

Figure 2-3 on page 2-5, Section 2.2.2: This figure is revised to update the status of the SFPUC wholesale customers (i.e., Skyline County Water District is now part of California Water Service [CWS] – Bear Gulch).

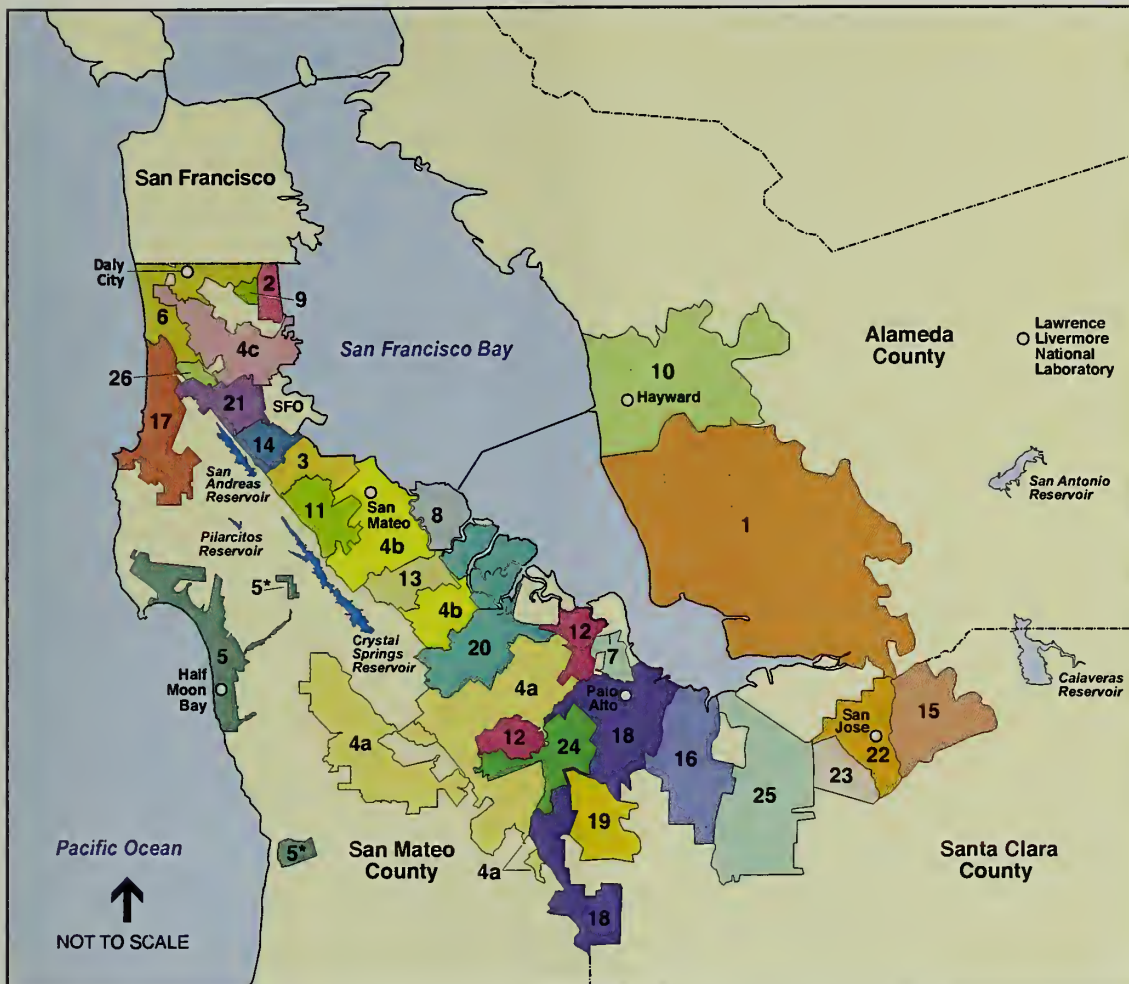
Figure 3-8 on page 3-21, Section 3.6.2: This figure is revised to include contour lines along the San Mateo Creek channel below the dam in response to Comment PD6.

Figure 5.1-3 on page 5.1-13, Section 5.1.4: This figure is revised to include contour lines along the San Mateo Creek channel below the dam in response to Comment PD6.

Figure 5.3-11 on page 5.3-31, Section 5.3.3: The text below the first photograph is revised to omit the word ‘possible’ from ‘possible mitigation site’.

Figure 5.13-8 on page 5.13-135, Section 5.13.5: This figure is revised for visual consistency with other figures in the Draft EIR.

Figure 5.15-1 on page 5.15-5, Section 5.15.1: This figure is revised to include Polhemus Creek.



Legend

(Wholesale customers and members of
Bay Area Water Supply and Conservation Agency)

- | | |
|---|--------------------------------------|
| 1 Alameda County Water District | 13 Mid-Peninsula Water District |
| 2 City of Brisbane | 14 City of Millbrae |
| 3 City of Burlingame | 15 City of Milpitas |
| 4a CWS – Bear Gulch | 16 City of Mountain View |
| 4b CWS – Mid-Peninsula | 17 North Coast County Water District |
| 4c CWS – South San Francisco | 18 City of Palo Alto |
| 5 Coastside County Water District | 19 Purissima Hills Water District |
| 6 City of Daly City | 20 City of Redwood City |
| 7 City of East Palo Alto | 21 City of San Bruno |
| 8 Estero Municipal Improvement District | 22 City of San Jose (North) |
| 9 Guadalupe Valley Municipal Improvement District | 23 City of Santa Clara |
| 10 City of Hayward | 24 Stanford University |
| 11 Town of Hillsborough | 25 City of Sunnyvale |
| 12 City of Menlo Park | 26 Westborough Water District |

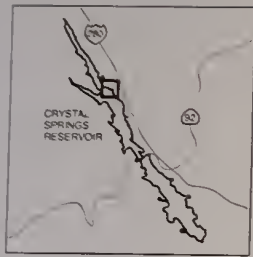
* Portions of Coastside County Water District not served by the SFPUC regional water system.

NOTE: For the purposes of this EIR, the California Water Service (CWS) Company is a single wholesale customer with three different water service districts.

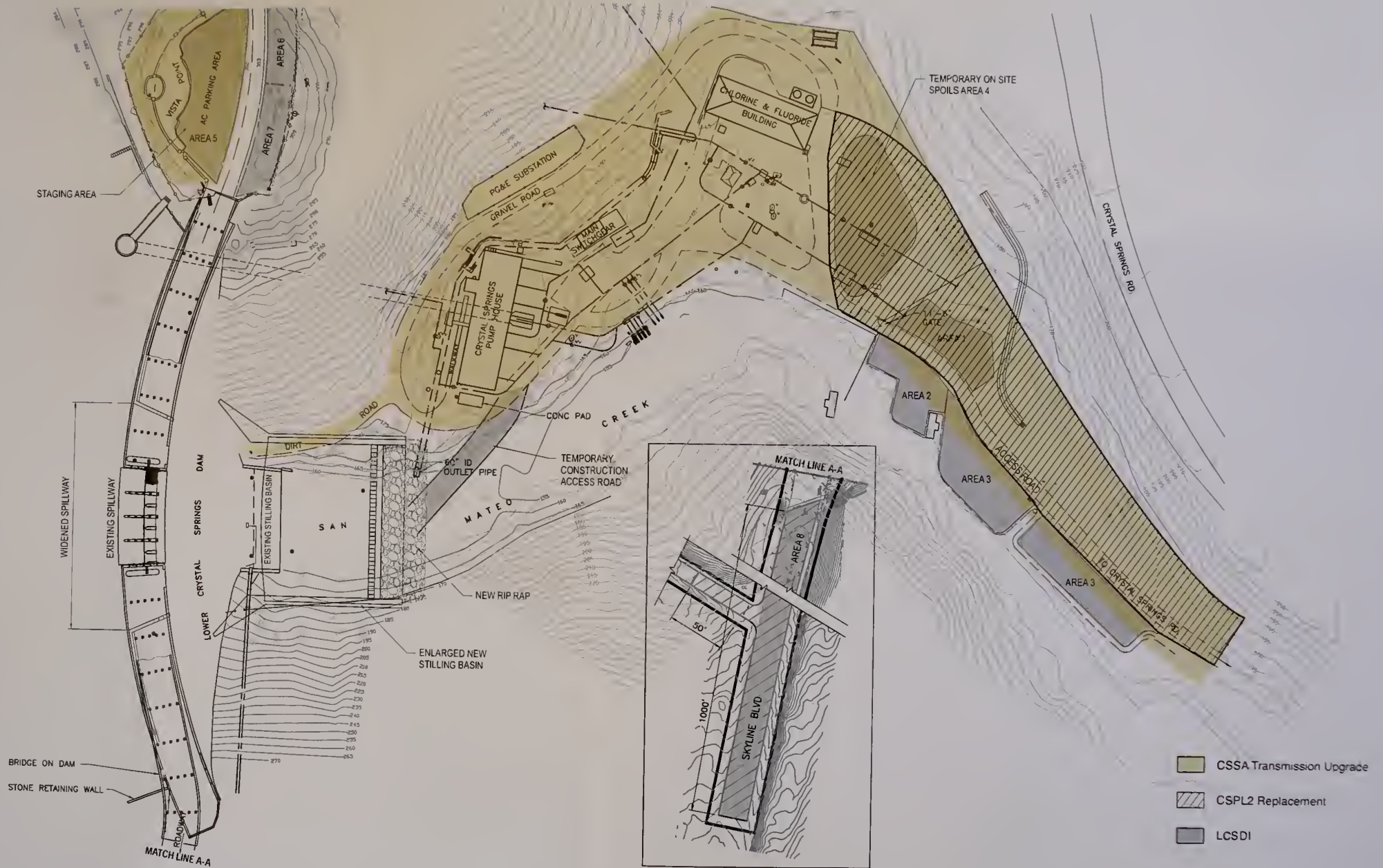
SOURCE: BAWSCA, 2010

SFPUC Lower Crystal Springs Dam Improvements
Figure 2-3 (Revised)
SFPUC Water Service Area –
San Francisco and SFPUC Wholesale Customers

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CRYSTAL SPRINGS RESERVOIR

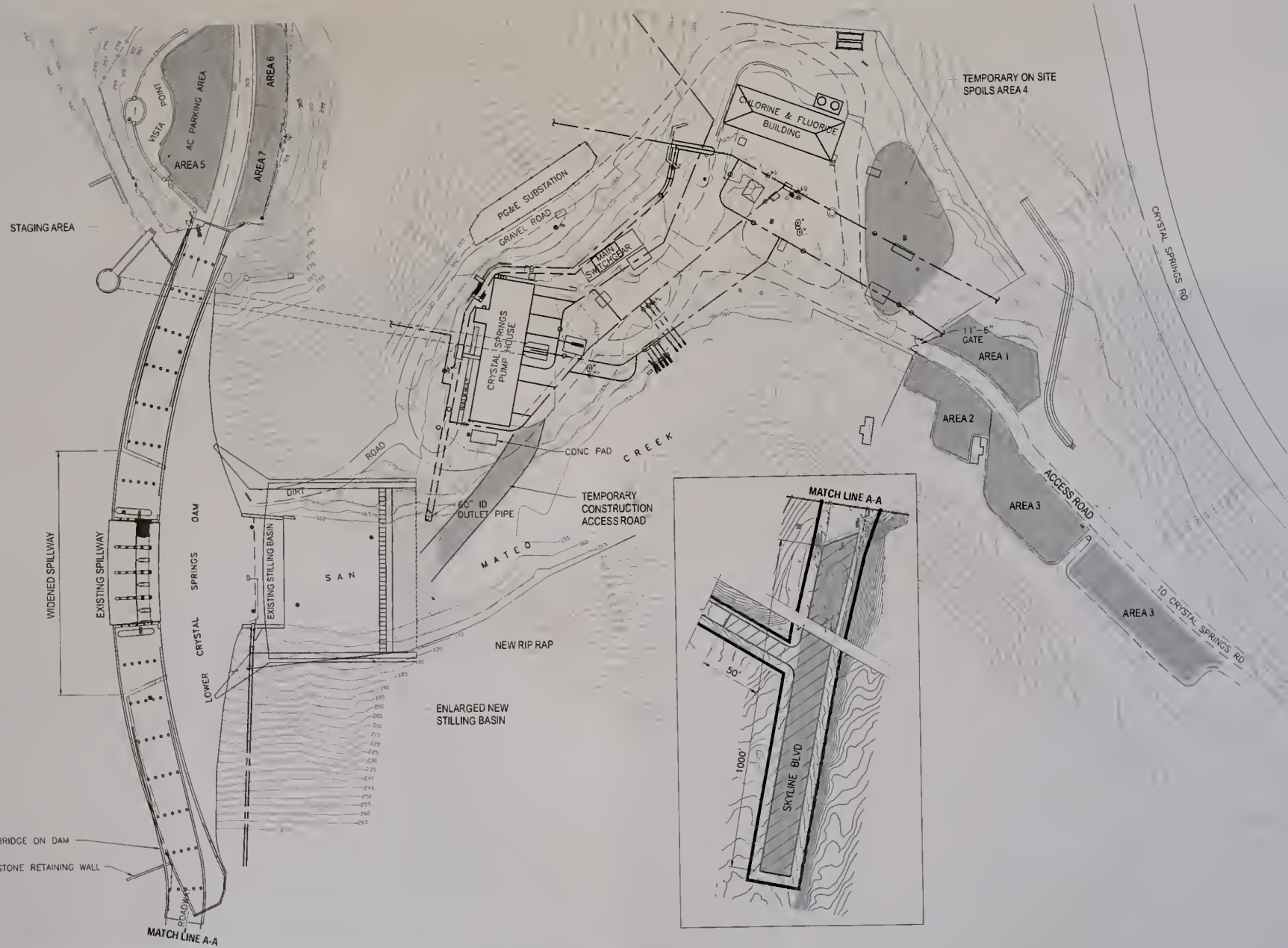
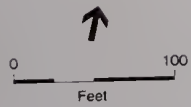


SOURCE: URS, 2009

SFPUC Lower Crystal Springs Dam Improvements
Figure 5.1-3 (Revised)
 Overlapping Construction Zones for
 Cumulative Projects in LCSD Vicinity



CRYSTAL SPRINGS RESERVOIR



SFPUC Lower Crystal Springs Dam Improvements
Figure 3-8 (Revised)
Staging and Storage Areas in the
Lower Crystal Springs Dam Vicinity

SOURCE: URS, 2009



F. Existing view of mitigation site (Boat Ramp Fountain Thistle Enhancement).



Simulated view of mitigation site (Boat Ramp Fountain Thistle Enhancement) showing view after removal of non-native pine trees.

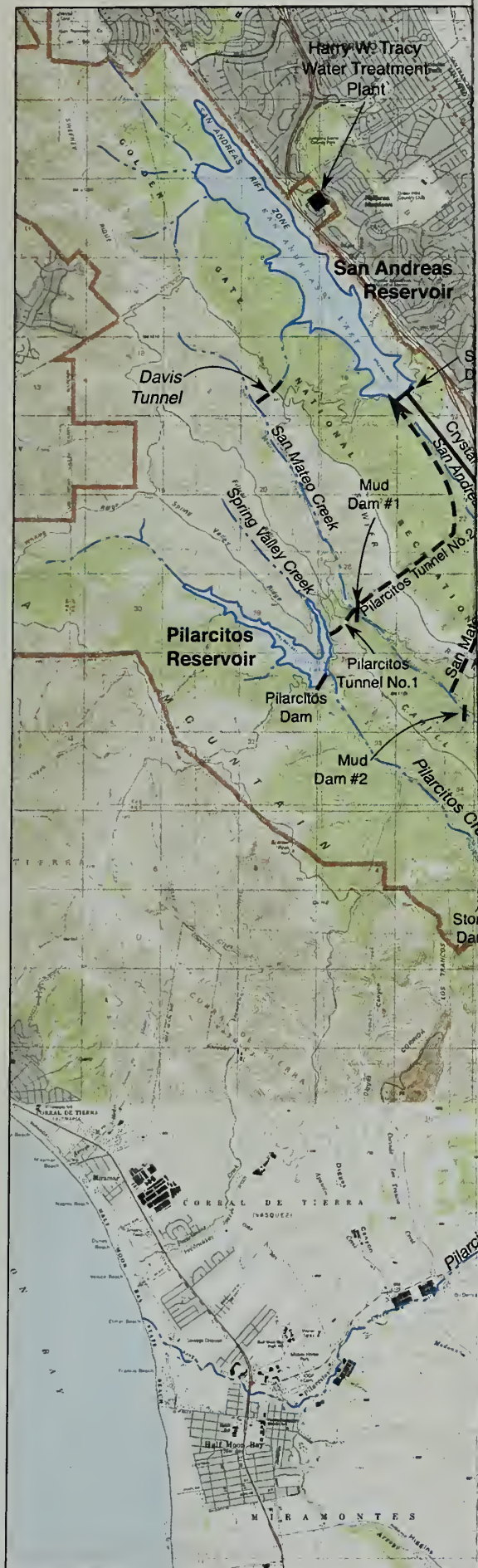


Potential view of dead oak trees along shoreline as a result of proposed operations once non-native pine trees have been removed at Boat Ram Fountain Thistle Enhancement site.

— Trees that would likely die due to inundation as a result of proposed operations

SOURCE: ESA + Orion, 2009

SFPUC Lower Crystal Springs Dam Improvements
Figure 5.3-11 (Revised)
 Visual Effects of Inundation on Shoreline
 Vegetation from Skyline Boulevard

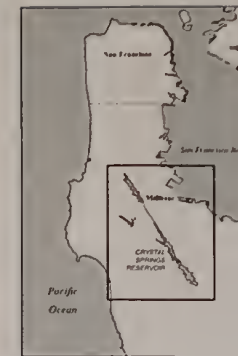


Project Site

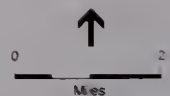


SA + Orion; USGS 1978

SFPUC Lower Crystal Springs Dam Improvements
Figure 5.15-1 (Revised)
 Peninsula Watershed Facilities and Creeks



★ LCSDI Project Site



SOURCE: ESA + Orion; USGS 1978

SFPUC Lower Crystal Springs Dam Improvements
Figure 5.15-1 (Revised)
 Peninsula Watershed Facilities and Creeks

APPENDIX C&R A

Comment Letters

WRITTEN COMMENTS SUBMITTED ON THE DRAFT EIR

Comment Letter Format	Comment Letter ID	Name of Commenter	Title	Organization/ Affiliation	Page
Letter	A_CDFG	Charles Armor	Regional Manager	California Department of Fish and Game (CDFG)	C&R A-3
Letter	A_Caltrans	Lisa Carboni	District Branch Chief	California Department of Transportation (Caltrans)	C&R A-7
Letter	A_DSOD	Michael G. Waggoner	Field Engineering Branch Chief	California Department of Water Resources, Division of Safety of Dams (DSOD)	C&R A-8
Letter	A_RWQCB	William B. Hurley, P.E.	Senior Engineer	San Francisco Bay Regional Water Quality Control Board (RWQCB)	C&R A-9
Letter	A_BAWSCA	Nicole Sandkulla, P.E.	Senior Water Resources Engineer	Bay Area Water Supply and Conservation Agency (BAWSCA)	C&R A-13
Letter	A_Hillsb	Cyrus Kianpour, P.E., P.L.S.	City Engineers	Town of Hillsborough Department of Public Works	C&RA-15
Letter	A_HillsbCSD	Anthony Ranii	Superintendent	Hillsborough City School District	C&R A-17
Letter	A_SFHPC	Charles Edwin Chase	President	San Francisco Historic Preservation Commission	C&R A-18
Letter	O_CASportFish2	Richard Izmirian	Member of the Board of Directors	California Sportfishing Protection Alliance	C&R A-20
Email	O_CNPS1	Drew Shell	San Mateo County Conservation Chair	Santa Clara Valley Chapter, California Native Plant Society (CNPS)	C&R A-22
Letter	O_CNPS2	Drew Shell	San Mateo County Conservation Chair	Santa Clara Valley Chapter, California Native Plant Society (CNPS)	C&R A-23
Letter	O_SVBC	Corrine Winter	Executive Director	Silicon Valley Bicycle Coalition	C&R A-33

Comment Letter Format	Comment Letter ID	Name of Commenter	Title	Organization/ Affiliation	Page
Comment Card	I_Bardet	Joan Bardet	N/A	N/A	C&R A-38
Email	I_Cooperman2	Joshua Cooperman	N/A	N/A	C&R A-40
Letter	I_Knight	Tiffany Knight, Ph.D.	N/A	N/A	C&R A-43
Email	I_Lawrence	Steve Lawrence	N/A	N/A	C&R A-46
Email	I_Michael	Darrell Michael	N/A	N/A	C&R A-47
Email	I_Naughton	M. Naughton	N/A	N/A	C&R A-48
Comment Card	I_Pace1	Margot and Steve Pace	N/A	N/A	C&R A-49

Each bracketed comment consists of a comment letter ID (indicated in the table above) as well as a topical code. The topical codes are indicated in square brackets below:

General Comments [G]
 Introduction and Background [INT]
 Project Description [PD]
 Cultural and Paleontological Resources [C]
 Transportation and Circulation [T]
 Noise and Vibration [N]
 Recreation [R]
 Biological Resources [B]
 Geology and Soils [GS]
 Hydrology and Water Quality [H]

For comments that are addressed by master responses only, the following topical codes are used:

Master Response on Lower Crystal Springs Dam Safety Issues [MR-G]
 Master Response on No Net Loss of Habitat Functions and Services [M1-B]
 Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation [MR2-B]



State of California – The Natural Resources Agency
 DEPARTMENT OF FISH AND GAME
 Bay Delta Region
 7329 Silverado Trail
 Napa, CA 94558
 (707) 944-5500
www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor

John McCamman, Director



April 6, 2010

Mr. Bill Wycko
 Environmental Review Officer
 San Francisco Planning Department
 1650 Mission Street, Suite 400
 San Francisco, CA 94103-2414

Dear Mr. Wycko:

Subject: Lower Crystal Springs Dam Improvement Project, SCH #2007012002, Draft
 Environmental Impact Report, San Mateo County

Department of Fish and Game (DFG) staff has reviewed the draft Environmental Impact Report (EIR) for the Lower Crystal Springs Dam Improvement Project (Project), proposed by the San Francisco Public Utilities Commission (SFPUC). The Project includes modifying various features of the Lower Crystal Springs Dam (LCSD) to comply with requirements of the California Department of Water Resources, Division of Safety of Dams (DSOD). Implementation would result in the removal of the DSOD operating restrictions on Crystal Springs Reservoir and restoration of the historical storage capacity of the reservoir. The project also includes raising an existing water quality sampling station (Sampling Station #5) at its current location to accommodate the proposed changes in reservoir operations.

DFG, a Trustee Agency under the California Environmental Quality Act (CEQA), is responsible for the conservation, protection, and management of the State's biological resources. Pursuant to Fish and Game Code Section 1801, it is the policy of the State to encourage preservation, conservation, and maintenance of wildlife resources, including perpetuation of all species of wildlife for their intrinsic and ecological values. In addition, pursuant to Fish and Game Code Section 1802, DFG has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. The purpose of DFG's comments is to provide guidance to the SFPUC to ensure that, if the Project under the Water System Improvement Program (WSIP) is implemented, biological resources are protected.

Dam Operations

The Lower Crystal Springs Dam Improvement Project will be built in conjunction with the Crystal Springs/San Andreas Transmission (CS/SA) Project. Since the CS/SA Project includes the infrastructure necessary for releasing water from Lower Crystal Springs Reservoir to San Mateo Creek, we have addressed most facility operations in a previous letter dated December 17, 2009 to the Crystal Springs/San Andreas Transmission Upgrade Project, SCH #2008022054.

B19, H8, PD10
 A_CDFG-01

Conserving California's Wildlife Since 1870

Mr. Bill Wycko
 April 6, 2010
 Page 2

We understand water from the Tuolumne River and the Alameda Creek watershed enters Crystal Springs Reservoir at the south end through the Pulgas Discharge Channel near the Pulgas Water Temple (pg 3-8 DEIR). We also understand this project is important for increasing seismic reliability during a major earthquake and for meeting DSOD requirements so that the water level in Lower Crystal Springs Reservoir may be increased.

PD3
 A_CDFG-02

For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Lake and Streambed Alteration Agreement (LSAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of an LSAA is subject to CEQA. DFG, as a responsible agency under CEQA, will consider the CEQA document for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. To obtain information about the LSAA notification process, please access our website at <http://www.dfg.ca.gov/habcon/1600/>; or to request a notification package, contact the Lake and Streambed Alteration Program at (707) 944-5520.

PD12
 A_CDFG-03

Special-Status Species at Lower Crystal Springs Dam

According to the DEIR, "The use of heavy equipment in or adjacent to the San Mateo Creek drainage, the transport of personnel and equipment to the site, and the use of temporary storage laydown sites would pose a direct threat of mortality or injury to both the listed resident species the California red-legged frog and San Francisco garter snake (SFGS), (pg 5.13-72 DEIR)." Fish and Game Code Section 5050 identifies San Francisco garter snake as a fully protected species. No provision of the code or any other law may be construed to authorize the issuance of permits or licenses to take any fully protected reptile or amphibian. "Take" is defined in Fish and Game Code as hunt, pursue, capture or kill, or attempt to hunt, pursue, catch, capture, or kill. All take of SFGS must be avoided.

B6
 A_CDFG-04

Figure 5.1-3

The contour lines for San Mateo Creek should be included in Figure 5.1-3 so project boundaries which overlap San Mateo Creek are clear.

PD6
 A_CDFG-05

Fountain Thistle

The DEIR discloses impacts to San Francisco fountain thistle (SFFT) which include potentially inundating 0.30 acres where SFFT is present. A California Endangered Species Act take permit will be required for take of SFFT and Marin western flax (*Hesperolinon congestum*) (MWF) from project activities.

B13
 A_CDFG-06

Mitigation Measure M-BI-8a

This mitigation measure indicates for impacts to SFFT and MWF, "Habitat would be replaced to achieve no net loss of habitat functions and services for the species (pg 5.13-107)." We are particularly concerned about the loss of genetic viability associated with loss of individual plants. The current SFFT population condition is such that loss of individual plants will reduce this species' ability to recover from endangered status. To

Mr. Bill Wycko
 April 6, 2010
 Page 3

prevent the loss of genetic viability from project impacts, protective measures must include individuals, (not habitat only) to successfully established and protected prior to project impacts.

B13
 A_CDFG-06
 cont.

Mitigation Measure M-BI-01b: Avoidance and Restoration

This measure indicates all temporary impacts on wetland streams and riparian habitat would be fully restored within three years of completion of construction. All restoration work should be completed immediately following construction or should be mitigated as a permanent impact.

B12
 A_CDFG-07

Mitigation Measure M-BI-c: Wetlands Creation and Enhancement for Construction and Operational Impacts

This measure indicates there will be a no net loss of habitat functions and services because habitat compensation will be in place within five years of the initiation of construction. All habitat compensation should be in place before project impacts to avoid temporal loss of habitat function and value.

B12
 A_CDFG-08

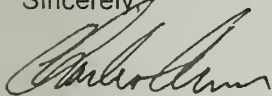
Mitigation Measure M-BI-3f: Pre-construction Clearance Surveys for San Francisco Dusky-Footed Woodrats

The mitigation measure indicates if young woodrats are present during nest disassembling, the biologists shall discontinue disassembling and return at least 24 hours later to allow time for the young to be relocated. It is unclear what is meant by returning 24 hours later to allow time for the young to be relocated. If young are detected, we recommend the qualified biologist make an age estimate during the initial nest disassembly to predict when the young will leave based on the species life-history. Once this estimate is made, the nest should not be tampered with until the young have left the nest since this is a State species of special concern.

B7
 A_CDFG-09

We appreciate your consideration of our comments. If you have any questions, please contact Mr. Wes Stokes, Environmental Scientist, at (707) 944-5571 or wstokes@dfg.ca.gov; or Mr. Greg Martinelli, Water Conservation Supervisor, at (707) 944-5570.

Sincerely,



Charles Armor
 Regional Manager
 Bay Delta Region

cc: See next page

Mr. Bill Wycko
April 6, 2010
Page 4

cc: State Clearinghouse

Ms. Deborah Craven-Green – Dgreen@sfwater.org
Mr. Greg Lyman – GLyman@sfwater.org
San Francisco Public Utilities Commission

Mr. Gary Stern – gary.stern@noaa.gov
Mr. Josh Fuller – Joshua.Fuller@noaa.gov
NOAA Fisheries

Mr. Robert Smith – robert.f.smith@usace.army.mil
U.S. Army Corps of Engineers

Mr. Ryan Olah – ryan_olah@fws.gov
Mr. Vincent Griego – Vincent_Griego@fws.gov
U.S. Fish and Wildlife Service

Mr. Xavier Fernandez – xafernandez@waterboards.ca.gov
San Francisco Regional Water Quality Control Board

Ms. Melissa Scianni – Scianni.Melissa@epamail.epa.gov
U.S. Environmental Protection Agency

DEPARTMENT OF TRANSPORTATION

111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

RECEIVED

APR 20 2010

CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
ME

Flex your power!
Be energy efficient!

April 15, 2010

BAG048
SCH#2007012002

Ms. Erika Lovejoy
Planning Department
City and County of San Francisco
1650 Mission Street, Suite 400
San Francisco, CA 94103

Dear Ms. Lovejoy:

**San Francisco Public Utilities Commission Lower Crystal Springs Dam Improvement
Project – Draft Environmental Impact Report**

Thank you for continuing to include the California Department of Transportation (Department) in the environmental review process for the Lower Crystal Springs Dam Improvement project. The following comments are based on the Draft Environmental Impact Report.

Encroachment Permit

Any work or traffic control within the State Right-of-Way (ROW) requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: <http://www.dot.ca.gov/hq/traffops/developserv/permits/>

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

PD13
A_Caltrans-01

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

LISA CARBONI
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

"Caltrans improves mobility across California"

DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



RECEIVED

APR 15 2007

CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
M.E.A.

APR 14 2007

Ms. Erika Lovejoy
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, California 94103

SCH #2007012002, Lower Crystal Springs Dam Improvements Project
Draft Environmental Impact Report
San Mateo County

Dear Ms. Lovejoy:

We have reviewed the subject Notice for this project which includes the alteration of Lower Crystal Springs Dam, which is under our jurisdiction for dam safety. The City of San Francisco has submitted an alteration application for this dam. We are currently reviewing the submitted information and will resolve all dam safety related issues prior to approving the application. Sharon Tapia, our Design Engineering Branch Chief, is responsible for the application process and can be reached at (916) 227-4660.

PD14
A_DSOD-01

If you have any questions or need additional information, you may contact Office Engineer Randy Fessler at (916) 227-4601 or Regional Engineer Y-Nhi Enzler at (916) 227-4604.

Sincerely,

A handwritten signature in cursive script that reads 'Michael Waggoner'.

Michael G. Waggoner
Field Engineering Branch Chief
Division of Safety of Dams

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section
Division of Statewide Integrated Water Management
901 P Street
Sacramento, California 95814

Governor's Office of Planning
and Research
State Clearinghouse
Post Office Box 3044
Sacramento, California 95812-3044



California Regional Water Quality Control Board

San Francisco Bay Region

1515 Clay Street, Suite 1400, Oakland, California 94612
 Phone (510) 622-2300 • FAX (510) 622-2460
<http://www.waterboards.ca.gov/sanfranciscobay/>



Arnold Schwarzenegger
 Governor

da S. Adams
 cretary for
 vironmental
 Protection

March 26, 2010
 Site No. 02-41-C0637 (XF)
 CIWQS Place No. 743590

Sent via electronic mail: No hard copy to follow

San Francisco Planning Department
 1650 Mission Street, Suite 500
 San Francisco, CA 94103-2414
 Attn.: Mr. Bill Wycko, Environmental Review Officer
 Email: bill.wycko@sfgov.org

Subject: Comments on Draft Environmental Impact Report for the Lower Crystal Springs Dam Improvements Project, SCH No. 2007012002

Dear Mr. Wycko:

San Francisco Bay Regional Water Quality Control Board (Water Board) staff has reviewed the Draft Environmental Impact Report (DEIR) for the Lower Crystal Springs Dam Improvements Project (Project). The purpose of the Project is to meet safety requirements imposed on Lower Crystal Springs Dam by the Department of Water Resources, Division of Safety of Dams (DSOD); thereby, allowing the San Francisco Public Utilities Commission (SFPUC) to restore the historical storage capacity of Crystal Springs Reservoir.

To meet DSOD requirements, the Project will modify the Lower Crystal Springs Dam to allow floodwater associated with the Probable Maximum Flood and other very large and infrequent floods to pass safely over the Lower Crystal Springs Dam. Specifically, the Project will widen, reshape and raise the dam spillway, raise the parapet wall, and replace the existing stilling basin with a new larger stilling basin. An additional ancillary component would involve increasing the height of a water quality sampling station located at the Pulgas Discharge Channel to accommodate the increase in water levels associated with restoring reservoir storage capacity.

After completing the modifications to Lower Crystal Springs Dam, the SFPUC would operate Crystal Springs Reservoir in much the same way as it does under existing conditions, except that the maximum normal water surface elevation would be 4 feet above its current level of 283.8 feet NGVD 29.1.

California Environmental Protection Agency

Comments on Federal and State Jurisdictional Waters within the Project Study Area

On pages 5.13-51 and 5.13-56 of the DEIR, the text incorrectly indicates that the total extent of federal jurisdictional waters in the project study area is 308.49 acres and that 1,033.61 acres of open water are under state jurisdiction only. According to Appendix H, 308.49 acres of federal jurisdictional waters will potentially be affected by the Project, but 1,342.10 acres of federal jurisdictional waters are within Project study area. The DEIR should be revised to correct this discrepancy.

Please also note that the text on pages 5.13-51 and 5.13-56 incorrectly references the Wetland Determination Report as Appendix G when it is actually Appendix H. The DEIR should be revised to correct this discrepancy.

Lastly, the DEIR should be revised to indicate that the 0.06 acres pond on top of the dam is a water of the state. This pond receives water from runoff and seeps and supports red-legged frogs. As a result, the pond has the beneficial use of preserving endangered species and is a water of the state.

B1
A_RWQCB-01

Comments on Significance Criteria for Impacts to Biological Resources

The following significance criterion was used to evaluate impacts to wetlands:

- Have substantial adverse effect on federally protected wetlands defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.

This criterion should be revised to include adverse effects to wetlands protected by the state under the Porter-Cologne Water Quality Control Act. In addition, the criterion should clearly indicate that indirect impacts to wetlands are also considered significant. Indirect impacts include, but are not limited to, excessive erosion and/or sedimentation; additional water (flooding); reduced water supply or flows; creating a condition of pollution; and watershed degradation.

B5
A_RWQCB-02

Comments on Flows in San Mateo Creek

The text indicates that the Project will not substantially alter flows below Lower Crystal Springs Dam. Currently, flows below the dam are from valve leaks and seepage. As such, these flows are not designed to support downstream fisheries. We support establishing reservoir releases to support downstream fisheries based on a flow schedule developed using the best available science.

B19, H8
A_RWQCB-03

**Comments on the Statewide General Permit for Storm Water Discharges
Associated with Construction Activities**

Page 5.15-14 of the DEIR includes a description of the requirements under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit; Order No. 2009-0009-DWQ). The text indicates that to comply with the General Construction Permit, the contractor must implement best management practices (BMPs) and prepare a stormwater pollution prevention plan (SWPPP) that describes how the BMPs will be implemented. Please be aware that under the General Construction Permit, the discharger (i.e., the SFPUC) is also legally responsible for ensuring that a SWPPP is developed and BMPs are implemented. Therefore, the text needs to be revised to indicate that the SFPUC must ensure implementation of BMPs and development of an adequate SWPPP under the General Construction Permit.

H1
A_RWQCB-04**Comments on Beneficial Uses of San Mateo Creek**

On page 5.15-15 of the DEIR, the text indicates that the existing beneficial uses of San Mateo Creek are freshwater replenishment, fish spawning, and rare and endangered species. Please note that the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) also lists wildlife habitat as an existing beneficial use of San Mateo Creek. Therefore, the DEIR should be revised to indicate that wildlife habitat is an existing beneficial use of San Mateo Creek.

H2
A_RWQCB-05**Comments on Mitigation Measure M-HY-3**

On page 5.15-44 of the DEIR, the text indicates that should construction activities cause a visible turbidity plume, corrective action will be undertaken to reduce the turbidity in surface water measured 300 feet downstream to levels below Basin Plan criteria for cold water fish habitat beneficial uses. Please note that 300 feet downstream of the discharge is not an appropriate location for measuring compliance with water quality objectives for receiving waters. Compliance with water quality objectives for receiving waters should be based on measurements collected within 50 feet of the discharge. In addition, the Basin Plan water quality objective for turbidity is as follows.

H3
A_RWQCB-06

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity attributable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.

The DEIR should be revised to include turbidity monitoring within 50 feet of the discharge and list the water quality objective for turbidity.

The DEIR also indicates that sanitary facilities shall be placed a minimum of 300 feet away from San Mateo Creek. We appreciate inclusion of this BMP as a mitigation measure and recommend ✓

Mr. Wycko
San Francisco Planning Department

- 4 -

Lower Crystal Springs Dam
Improvements Project (cntd.)

that the text be revised to also indicate that sanitary facilities shall be placed away from curbs and storm drains.

H3
A_RWQCB-06
cont.

Closing

Please contact Xavier Fernandez at 510-622-5685 or xafernandez@waterboards.ca.gov with any questions or comments.

Sincerely,



William B. Hurley, P.E.
Senior Engineer

cc: State Clearinghouse

San Francisco Planning Department, MEA, Erika Lovejoy, erika.lovejoy@sfgov.org
SWRCB, DWQ, Stateboard401@waterboards.ca.gov
CDFG, Wesley Stokes, wstokes@dfg.ca.gov



Bay Area Water Supply & Conservation Agency

April 16, 2010

Mr. Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Subject: Case No. 2006.0536E – Draft Environmental Impact Report on the Lower Crystal Springs Dam Improvements Project

Dear Mr. Wycko,

Thank you for the opportunity to provide the following comments from the Bay Area Water Supply & Conservation Agency (BAWSCA). BAWSCA represents the interests of 24 cities and water districts and two private utilities that purchase water wholesale from the San Francisco Regional Water System. These agencies, in turn, provide water to 1.7 million people, businesses and community organizations in Alameda, Santa Clara and San Mateo counties. These comments are in response to the Draft Environmental Impact Report (EIR) published March 2, 2010 for the Lower Crystal Springs Dam Improvements project.

The comments below follow the report organization and do not reflect the level or priority.

1. **Section 1.4.2 Project Operations (pg. 1-12)**

The text describes one operating objective is "to avoid uncontrolled spills and minimize releases to San Mateo Creek." Is there any specific regulatory or policy condition that quantifies the obligation of the SFPUC to operate the reservoir to accomplish this objective?

PD4
A_BAWSCA-01

2. **Section 5.15.1.1 Surface Water Hydrology (pg. 5.15-7)**

The text indicates that the stoplog system was employed 9 times over a 23-year period to manage expected runoff when large storms occurred over the watershed. **Section 5.15.3.5 Operational impacts (pg. 5.15-34)** discusses the future expected frequency of operating at any water level above the planned 287.8 foot reservoir elevation over short durations as "about one year in three." This would imply a frequency of 7 or 8 excursions over a 23-year timeframe. Why does the frequency remain essentially the same as pre-project conditions even though the maximum normal operating level is four feet higher than before?

H9
A_BAWSCA-02

Mr. Bill Wycko
April 16, 2010
Page 2 of 2

Thank you for the opportunity to provide these comments on the Draft EIR for the Lower Crystal Springs Dam Improvements project dated March 2, 2010. If you have any questions, please contact me at (650) 349-3000.

Sincerely,

A handwritten signature in black ink, reading "Nicole M. Sandkulla". The signature is fluid and cursive, with the first name "Nicole" being more prominent.

Nicole M. Sandkulla, P.E.
Senior Water Resources Engineer

cc: A. Jensen, BAWSCA
File



TOWN OF HILLSBOROUGH

1600 FLORIBUNDA AVENUE
HILLSBOROUGH
CALIFORNIA
94010-6418

DEPARTMENT OF PUBLIC WORKS

April 14, 2010

Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

RE: Lower Crystal Springs Dam Improvement Project

Dear Mr. Wycko:

The Town of Hillsborough supports the San Francisco Public Utilities Commission efforts to improve the regional water system. Following is our comments on the Environmental Impact Report (EIR) for the Lower Crystal Springs Dam Improvements Project:

1. The proposed project will modify the spillway on the opening side of the dam by widening it from 88 feet to 208 feet. The increase width of the spillway will accommodate Peak Maximum Flood as required by the Division of Safety of Dams and will result in significantly larger volumes of flow into San Mateo Creek. The EIR does not address the downstream impact of the increased flow within San Mateo basin and extent of potential flooding downstream. Assuming partial or full release of Peak Maximum Flood, what will be the impact of flows on the local roadway networks, private properties, schools and the Town of Hillsborough utility and pumping facilities in this basin?

MR-G
A_Hillsb-01

The EIR states that the probability of Peak Maximum Flood is very low but does not provide the rain fall intensity of "Probable Maximum Precipitation" as defined by National Oceanic and Atmospheric Administration. We request a thorough analysis of the impacts of increasing the width of the spill way thus resulting in additional flows down stream.

MR-G
A_Hillsb-02
MR-G
A_Hillsb-03

We also wish to note that this issue has been a concern to Town residents in the past due to erosion of the Creek banks from larger scale releases of water from the reservoir, as occurred in the past decade damaging the properties of residents with homes on the Creek. As this is a recurring problem, this must be more fully addressed and discussed in the EIR.

H10
A_Hillsb-04

The Town is also under a cease and desist order from regulatory agencies regarding wastewater discharges and volumes. The Town is also concerned about the enhanced flow volume's impact on the capacity of sewer pipes and potential overflows.

H11
A_Hillsb-05

2. Section 5.14 of the EIR discusses the Geology and Soils within the project area. Because of the proximity of this dam to the San Andreas fault, the EIR references seismic stability study conducted by W.A. Wahler and Associates in 1977, which concluded that potential in the dam foundation rupture is remote.

Given the recent seismic events in China, Southern California, Indonesia, Mexico, Chile, and Haiti as well as the time line of the last study of the dam in 1977, the Town is requesting that SFPUC approve a seismic assessment and seismic performance study of the dam and its foundation with this project, including new concrete core sample, use of updated software and imaging techniques by independent seismic experts and seismic engineers, and provide a copy of that study to the Town, members of the public and other agencies. We further request that SFPUC implement the study's recommendations, prior to commencement of construction. Since SFPUC is engaged in improving this facility any seismic upgrade can easily be included with the improvements identified in the EIR.

G1
A_Hillsb-06


3. Page 5.15-4 of the EIR discusses the possibility of dam failure during a catastrophic failure. We request that SFPUC investigate possibility of early warning system, such as sirens with email alerts, to notify the residents and public agencies in anticipation of such emergencies. All future emergency planning and notification work should be coordinated with Central County Fire Department and San Mateo County Office of Emergency Services.

G4
A_Hillsb-07

The early warning system should also be included during Peak Maximum Floods to ensure private and public properties are notified.

Please feel free to contact me at 650-375-7444 to discuss further on any of these comments.

Sincerely,



Cyrus Kianpour, P.E., PLS
City Engineer

HILLSBOROUGH CITY SCHOOL DISTRICT

...a tradition of quality

300 El Cerrito Avenue • Hillsborough, CA 94010

April 16, 2010

Bill Wycko
 Environmental Review Officer
 San Francisco Planning Department
 1650 Mission Street, Suite 400
 San Francisco, CA 94130

BOARD OF EDUCATION
 MARY ELLEN BENNINGER
 GREGORY J. DANNIS
 LYNNE ESSELSTEIN
 MARY HUSER
 STEVEN KOURY

SUPERINTENDENT
 ANTHONY H. RANII

RE: Lower Crystal Springs Dam Improvement Project; Public Comment

Dear Mr. Wycko:

The Hillsborough City School District would like to take this opportunity to comment on the Environmental Impact Report (EIR) for the Lower Crystal Springs Dam Improvement Project:

South School is located immediately adjacent to a small creek. Usually the flows in this creek are small. However, with increased capacity comes the possibility of larger scale releases of water from the reservoir. We request that this specific issue of large scale water releases and their effects on the creek be more specifically addressed in the EIR.

H4, H11
 A_HillsCSD-01

We are also concerned as to what larger flows resulting from larger scale water releases would do the pipes and water systems at all of our sites and request that this be more fully studied.

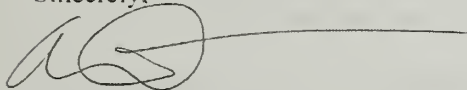
We strongly request that the possibility of a dam failure or rupture due to seismic events be studied more fully. The last time the dam was fully investigated for seismic stability was 1977. Since then, many forces have been at play on the dam, and we strongly request that more study and, if necessary, seismic upgrades be included within the scope of this project. A dam failure could put hundreds of students in danger. To this end, we would request that an early warning system, such as sirens and email alerts, be included within the scope of this project.

G1
 A_HillsCSD-02

G4
 A_HillsCSD-03

Feel free to contact me at (650) 548-4210.

Sincerely,



Anthony Ranii, Superintendent

April 9, 2010

Mr. Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Subject: Comments on the Draft Environmental Impact Report (EIR) on the Lower Crystal Springs Dam Improvements Project

Dear Mr. Wycko:

On April 7, 2010, the Historic Preservation Commission (HPC) held public hearings and took public comment on the Draft EIR on the San Francisco Public Utilities Commission's (SFPUC's) Lower Crystal Springs Dam Improvements Project dated March 2, 2010. After discussion the HPC arrived at the following comments:

- The HPC would like to include discussion of the history of Crystal Springs Valley as part of the interpretive panels that the SFPUC is proposing to develop as part of mitigation measures for historical resources impacts on the Lower Crystal Springs Dam.

C1
A_SFHPC-01
- The Draft EIR indicates that both the Lower Crystal Springs Dam and the South Crystals Springs Cottage are eligible for listing in the National Register of Historic Places (NRHP). As the responsible agency, the SFPUC should nominate both the Lower Crystal Springs Dam and the South Crystal Springs Cottage to the NRHP.

C2
A_SFHPC-02
- The HPC recommends that if the original construction drawings of the Lower Crystal Springs Dam are not available, then the mitigation measures should include Level 1 recordation as part of the Historic American Engineering Record (HAER) report (Level 1 HAER recordation includes measured drawings).

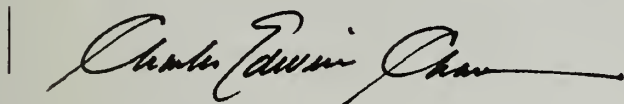
C3
A_SFHPC-03
- The HPC supports the mitigation measure to evaluate the condition of the retaining wall along the western edge of the South Crystal Springs Cottage property and if found to be necessary, to relocate the retaining wall.

C4
A_SFHPC-04
- The Historic Context, Architectural and Archaeological Survey Report for the Lower Crystal Springs Dam Improvements Project used to support the analysis in the Draft EIR refers to "slavery" that occurred during the Mission San Francisco period between the Spanish ruling class and the Native Americans. The Spanish used a feudal system which intended to convert Native Americans to Catholicism, and as such, the use of the term "slavery" is inappropriate. In addition, the report does not include discussion of how the Native Americans were treated by the Americans during the post-Mission period.

C5
A_SFHPC-05

The HPC appreciates the opportunity to participate in review of this environmental document.

Sincerely,

A handwritten signature in black ink, reading "Charles Edwin Chase". The signature is written in a cursive style with a long horizontal flourish at the end.

Charles Edwin Chase, President
San Francisco Historic Preservation Commission

**California Sportfishing Protection Alliance***"An Advocate for Fisheries, Habitat and Water Quality"*

Richard Izmirian, Member of the Board of Directors

2215 Eaton Avenue, San Carlos, CA 94070

Tel: (650) 342-3200 E-mail: izmirian@earthlink.netWeb: www.calsport.org

Bill Wycko, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

RE: Draft Environmental Impact Report on the Lower Crystal Springs Dam
Improvements Project

Dear Mr. Wycko:

The Draft Environmental Impact Report on the Lower Crystal Springs Dam Improvements Project acknowledges that some steelhead continue to find their way up San Mateo Creek to spawn. The document also acknowledges their status under the Endangered Species Act as "threatened".

The document indicates that scoping comments were submitted concerning evaluation of in-stream flows below the dam for steelhead protection. These scoping comments cited both the Endangered Species Act and 5937 of the California Fish and Game Code. This section of the Fish and Game Code requires that enough water be allowed to flow past a dam to keep fish in good condition downstream of the dam.

In spite of the scoping comments on flows, the document ignores the issue of 5937 of the Fish and Game Code. The Endangered Species Act issue is answered by a statement that the existing seepage is the baseline condition, that flows will continue to be blocked, and therefore no impact exists.

We suggest you re-evaluate what it means to comply with the Endangered Species Act, and fully cooperate with the Section 7 consultation between the Army Corp of Engineers and the National Marine Fisheries Service. It must be determined what flows below Lower Crystal Springs Dam are required to maintain the "threatened" central California coast steelhead in San Mateo Creek.

B19
O_CASportFish2-01

Lower Crystal Springs Dam Improvements Project

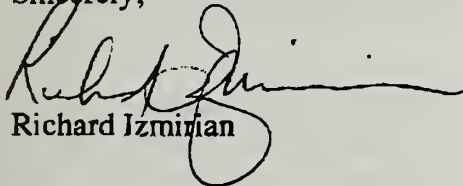
Page 2

The SFPUC has never been granted an exemption from either 5937 of the Fish and Game Code or from the Federal Endangered Species Act. The document should acknowledge these requirements, and contain a full evaluation of the environmental needs of San Mateo Creek below Crystal Springs Dam. The evaluation must include determination of optimal flows for migration, spawning, and rearing of "threatened" central California Coast Steelhead. Study parameters must include temperature, dissolved oxygen, geomorphology, food supply, substrate composition, pool/riffle ratio, and riparian conditions.

B19
O_CASportFish2-01
cont.

Thank you for the opportunity to comment.

Sincerely,



Richard Izmirian

From: [Drew Shell](#)
To: Erika.Lovejoy@sfgov.org
cc: pic@sfgov.org
Subject: CNPS comments on Crystal Springs Dam project
Date: 04/16/2010 04:10 PM
Attachments: [CNPSCommentsReCrystalSpringsDam.pdf](#)

To: San Francisco Planning Department
 Re: Draft EIR on the Lower Crystal Springs Dam Improvements Project

Dear People,

Attached are comments from the California Native Plant Society (CNPS) regarding the proposed Lower Crystal Springs Dam Improvements Project, submitted today, April 16, 2010, at 4:10pm.

The attached comments go into more detail on our many deep and serious concerns regarding this project, but in summary we are opposed to the project as currently described, and do not feel that the DEIR adequately reflects the scope and seriousness of possible impacts on rare native plant species and communities at the project site. Nor do we agree that proposed mitigations are adequate, viable, or sufficient to reduce expected project impacts to less than significant levels. With such a large number of rare species being impacted, and so many truly critical populations being harmed or destroyed, this project must be held to a very high standard in terms of justifying its need as well as mitigating its impacts. The current proposal fails in both regards.

G8
 O_CNPS1-01
 B18
 O_CNPS1-02
 B17, B18
 O_CNPS1-03
 PD3
 O_CNPS1-04

Sincerely,

Drew Shell
 San Mateo County Conservation Chair
 Santa Clara Valley Chapter
 California Native Plant Society

CNPS Comments Regarding Lower Crystal Springs Dam Improvements Project

Prepared By

Drew Shell
San Mateo County Conservation Chair
Santa Clara Valley Chapter
California Native Plant Society

April, 2010

1. Introduction

This document provides public comments from the California Native Plant Society (CNPS) regarding the Draft EIR for the Lower Crystal Springs Dam Improvements Project. These comments are intended to be supplemental to any other comments received from CNPS.

2. Issues Regarding Project/Site Characterization

2.1. Serpentine bunchgrass not adequately mapped

Instances of serpentine bunchgrass are described in the DEIR as being extensive on the eastern shores of both the upper and lower reservoirs, and there are in fact proposed mitigations for this rare plant community. Yet the vegetation maps in the DEIR do not separately identify this plant community, instead only identifying "non native grassland". The same is also true of the detailed maps of specific impacts presented in Appendix I. This prevents the independent evaluation of impacts on serpentine bunchgrass, or an understanding of where that community is found in relation to other impact sites (which is important for an understanding the overall extent of impacts and thus the overall adequacy of proposed mitigations).

In addition, discussion of serpentine bunchgrass within the DEIR is somewhat dismissive of the condition or importance of those instances found directly in the project area itself, due to the presence of non native grasses in those areas as well. This fails to acknowledge the overall context in which these bunchgrass meadows exist, and their continuing importance despite the presence of non natives. The unfortunate reality is that even the serpentine meadows in our area are continuously under assault from a broad array of threats such as development, invasive species, climate change, and changes in soil chemistry associated with auto exhaust. While such meadows may not be pristine, they remain the most important and most viable sites for long term preservation of a broad array of native California meadow species, including many rare and endangered species. Therefore any loss of serpentine grassland, regardless of the presence of non native grasses, must be considered a significant and irreparable impact.

B3, B18
O_CNPS2-01

2.2. Inadequate mapping outside 291.8 foot level

Vegetation mapping and detailed mapping of impacted rare plant species do not extend outside the 291.8 foot impact level. This prevents an evaluation of project impacts in a broader context, such as what portion of existing populations might remain after the project, and thus how viable those remaining populations may be.

B4
O_CNPS2-02

2.3. Potential for Kings Mountain Manzanita described as low

The site assessment for the project describes the potential for occurrence of Kings Mountain Manzanita as low, based on assumptions that this species does not occur below 1000ft and is primarily found to the west of the project area. Yet this species has been observed and documented both to the south (at Teague Hill Open Space) and to the east (at Edgewood County Park), and also at elevations below 850ft (at Edgewood County Park). The potential for occurrence in the project area should therefore be at least moderate, if not high.

B8
O_CNPS2-03

2.4. Fragrant Fritillary not adequately surveyed for

Fragrant Fritillary is described as historically being present in the project area, as indicated by CNDDDB records, but not observed during 2006 site surveys and thus not considered for mitigation. This is a significant oversight given the long standing documented presence of this species at this site, and the characteristics of the flower and life cycles of this species.

The CNDDDB reports for Fragrant Fritillary indicate a long standing presence in the project area, with numbers in the 1000s observed in 1988 and 1989, close to 1000 observed in 2009, and plants still extant as of the last official report in 2003. Furthermore, as a perennial, individuals of this species are likely to continue to exist even in seasons where fewer numbers are observed. Such large and perennial plant populations are unlikely to simply "wink out" in just 3 years (unless something major has changed at the site, but no such changes are known). Finally, CNDDDB reports specifically describe populations of these species in the project area as being associated with other rare species known to still be extant, including Fountain Thistle and Marin western flax.

B9
O_CNPS2-04

As a perennial, and one subject to the impacts of deer browsing on its flower heads, this species may have seasons where the observed number of individuals is low (perhaps even 0) even when the population is still present and viable. Failure to acknowledge this possibility, and to provide additional targeted surveying for a rare plant known to exist at the project site for many years, is a significant oversight.

↑ B9
O_CNPS2-04
cont.

2.5. Inadequate context for discussion of rare plant species

The individual discussions of each rare plant species do not provide adequate overall context in which to evaluate the scale or significance of expected project impacts. Such context should include the current estimated population sizes, currently known remaining populations and their locations and sizes relative to those at the project area, current threats to overall long term survival and how the expected project impacts fit into that picture, etc. For example:

MR2-B
O_CNPS2-05

- Fountain thistle is found only in central San Mateo County, and due to highly specialized habitat needs (serpentine and persistent water) its available habitat is extremely restricted. Populations on the Crystal Springs watershed are far and away the largest, healthiest, and most viable remaining populations. And anecdotal reports from those who have visited the areas that would be impacted by the project indicate that they are in fact the largest and healthiest fountain thistle populations known to exist. As such, project impacts are not simply a matter of damaging one small area and replacing it with another, but are in fact a matter of permanently destroying a significant and critical portion of the very heart of still extant fountain thistle populations. Such a loss goes beyond mere numbers of plants or size of habitat, and strikes at the very core of the long term viability of this exceedingly rare species.

MR2-B
O_CNPS2-06

- Crystal Springs lessingia is, as its name implies, centered primarily around Crystal Springs itself. While there are reports from north bay (but no CNDDDB reports) as well as outlier sightings not on the watershed itself, the vast majority of populations and individuals of this plant are still restricted to the Crystal Springs watershed itself, and in particular to serpentine grasslands along the eastern margins of the reservoirs. As such, the projected loss of a full 2.6 acres of habitat for this plant, along with potentially significant impacts to another 3 acres, is a huge and seriously grave impact. Such an enormous and permanent loss of prime habitat at the very heart of the limited distribution of this highly localized plant cannot be mitigated to less than significant levels, nor can it adequately be mitigated for via attempted mitigation at a mere 1:1 ratio.

B14
O_CNPS2-07

- Arcuate bush mallow is not restricted to serpentine and has been reported over a much broader range than many of the other rare species in the project area, but this plant has suffered long, inexorable declines over many decades due to development, fire suppression, type conversion of habitat, and invasive species. The potential impacts on just 8 more plants in association with the project may not seem like much, but aside from one hillside in Edgewood County Park, the existing known individuals of this plant number no more than 2-3 dozen. As a result the loss of 8 individuals would in fact be a huge impact on the overall population of this plant, pushing it another step closer to possible extinction. Furthermore, the potential conversion and loss of its habitat is equally distressing. This species is known to respond vigorously from seed following fire, and thus areas where adult plants are found are also highly likely to host a significant and important seed bank from which future plants can grow. Alteration or destruction of such habitat therefore represents a significant loss that cannot be mitigated simply through the short term propagation of a comparable number of adult individuals elsewhere. The existing habitat quite literally represents decades or even centuries of activity by this species to find suitable habitat niches and establish adequate seed banks to ensure long term survival.

B10
O_CNPS2-08

- Marin dwarf flax (also referred to as Marin western flax) has very specific habitat requirements is found at only three locations in San Mateo County. As a disjunct set of populations from those in north bay, these San Mateo County populations are extremely important to the long term survival of the species. The largest of these three populations is the one in the Crystal Springs watershed, which is therefore extremely important to long term survival of this species on the peninsula. This watershed population would be impacted by project activities at the southern boat ramp staging area as well as by increased reservoir levels, and such impacts must be considered *highly* significant. Mitigation efforts should include not just attempts to establish new populations, but also enhancement of the *existing* habitat within the watershed that may be degraded by encroaching non-native plants such as *Lolium multiflorum* (Italian rye grass).

B15
O_CNPS2-09

These are but a few examples of how important it is to consider the overall context of each rare species rather than just the simple numbers associated with a particular location. Full analysis of this nature must

↓ MR2-B
O_CNPS2-10

be provided for all impacted rare species in the project area in order to fully evaluate and understand the true importance and severity of the anticipated project impacts.

MR2-B
O_CNPS2-10
cont.

2.6. No analysis of impact due to changes in water table

It is acknowledged that increasing the reservoir levels will impact the water table and hydrology in surrounding areas. This is described as a potential benefit to mitigation efforts for plants such as Fountain Thistle in areas outside the 291.8 foot level. However no comparable analysis is provided for any potential *negative* impacts on rare plant species or plant communities that might occur as a result of these changes, and thus no mitigations are proposed for any such negative impacts that might extend outside the 291.8 foot level.

B11
O_CNPS2-11

2.7. Inconsistency with own management policies overlooked

Impact BI-10 discusses conflicts with local policies, but fails to discuss any of the many and serious conflicts of this project with SFPUC's own Watershed Management Policies regarding the treatment of rare plants and plant communities on the watershed. Yet section 5.13.2.3 of the DEIR explicitly lists such policies and mentions that they are potentially relevant to the project.

B16
O_CNPS2-12

3. Issues Regarding Mitigation Proposals

3.1. Mitigation planning deferred to a later date

Extremely large portions of mitigation planning are left unspecified, and deferred to a future date. Such deferral prevents a full and independent analysis of the feasibility of mitigation for the identified project impacts, and therefore violates CEQA requirements; this is often referred to as a "Sundstrom violation", in reference to case law which has declared such deferral illegal under CEQA. It is important to bear in mind that the purpose of CEQA is not simply to identify project impacts and agree to mitigations, but also to prove to a skeptical public that any proposed mitigations are in fact actually feasible, and will truly achieve the intended goal of mitigating for project impacts. Without adequately defined mitigations at the time of consideration of an EIR, there is no way that such proof can be found to have occurred.

Specific areas of deferral include:

- Mitigation M-BI-7a proposes that SFPUC "shall identify a site with at least 10 acres of degraded or potential serpentine grassland (e.g., the Boat Ramp South site..." The upshot is that no specific mitigation area of appropriate size or character has yet been identified or evaluated. It is therefore impossible to prove that such a site exists, or can feasibly be restored in the proposed manner.
- It is indicated that specific goals, objectives, success criteria, and other mitigation parameters will be later defined in a Mitigation And Monitoring Plan (MMP). The result is that critical aspects of the proposed mitigations are left undefined at this time, and are therefore impossible to evaluate in terms of their adequacy or potential for success. Specific parameters left undefined at this time include such critical areas as:
 - o Primary mitigation goals & objectives
 - o Mitigation site selection
 - o Instruments for long term protection of mitigation sites
 - o Baseline information on existing conditions at impacted sites
 - o Specific compensation plans for identified mitigations
 - o Site maintenance plans
 - o Mitigation success criteria
 - o Ongoing monitoring plans
 - o Long term management plans
- Mitigation M-BI-8a likewise defers identification of suitable mitigation sites for all individual rare plant species being impacted.

It is acknowledged that providing complete and final versions of these items at this point in the planning process is impossible, however completely deferring them in the manner displayed in the DEIR is unacceptable. Simply saying that these *will* exist in the future in no way proves that the resulting mitigations will be adequate, and deprives the public of the ability to independently evaluate the mitigations prior to approval of the proposed project.

MR2-B
O_CNPS2-13

3.2. Overlapping of proposed mitigations is problematic

The intent of the described mitigations is to overlap mitigation for rare plant species with that of serpentine grasslands. This is problematic in a number of ways:

- Different plant species can have very different needs, and there is no supporting evidence to show that a single, contiguous parcel of land can actually be found that will suit the multiple mitigations goals proposed to be grouped together. For lack of such evidence it is impossible to evaluate the viability of this proposed overlapping of mitigation efforts.

MR2-B
O_CNPS2-14

- The sites being mitigated for span a broad set of locations around the existing reservoirs, with a corresponding diversity of habitat conditions. This diversity is important as it ensures that poor conditions in a given year at one single site will not necessarily impact the entire population in the region. Selection of a single, large mitigation site fails to replicate this distributed and diverse set of habitats for the various species involved.
- By overlapping mitigation efforts at a single site, the overall *combined* impacts across all sensitive species and plant communities are not adequately mitigated. For example, the mitigation for serpentine grasslands is only required to be 10 acres, to offset a projected impact on 8.3 acres. Yet the impacts to specific sensitive species totals to over 3 acres, and there is no clear indication in the provided species maps as to how these additional acres might overlap with the existing 8.3 acres. For lack of such documentation it must be assumed that the total impact area is potentially as much as 11.3 acres, yet if mitigation efforts are overlapped on a single 10 acre parcel then that full 11.3 acre impact is not adequately mitigated.

MR2-B
O_CNPS2-14
cont.

3.3. Mitigation relies on translocation

The project would result in the permanent loss of existing, occupied, known-to-be-viable habitat, and would attempt to compensate for that loss by creating new, unproven habitat elsewhere. As has been documented by the California Department of Fish & Game as well as others, there are very significant challenges and difficulties in establishing new habitat for a given species, and in establishing new, viable, *permanently self sustaining* plant populations. For rare plants, which often have specific needs that are poorly understood and which are often influenced by subtle aspects of the local environment not easily observed or recreated, the challenges are greatly magnified.

Due to the significant challenges involved, the success rate for such "translocation" mitigation of rare plants, involving creation of new populations rather than preservation of existing ones, is extremely low. A 1991 study on this topic was prepared for CDFG by San Francisco State University, and found that of 53 such mitigation efforts reviewed only a mere 15% could be considered successful.

For this particular project we are not talking about just one species, but at least 8 rare plant species that would be impacted, and not just a single, small population, but a broad array of populations spread over a broad geographic area. Yet the sole mitigation technique proposed for this ecologically *huge* impact is that of translocation.

MR2-B
O_CNPS2-15

3.4. Proposed compensation ratios problematic

The proposed mitigations would compensate for the loss of habitat for rare plant species and plant communities only at a roughly 1:1 ratio. Yet as described above, the proposed mitigations based on translocation are of questionable viability. In addition, loss of *existing* known habitat has other potentially not well documented impacts such as loss of existing seed banks, loss of dormant individuals of perennial species not observed during plant surveys, loss of local ecological interactions or balances that may be important for long term survival of particular species, loss of local features formed through long term occupation of habitat that may be difficult to quickly replicate elsewhere (such as soil chemistry and structure), etc.

Given that we are talking about such a large number of such highly rare plant species, including some of their most important populations, a simple 1:1 compensation ratio for habitat loss cannot be considered adequate. In order to ensure that mitigation truly results in establishment of a comparable amount of high quality, permanently self sustaining habitat and plant populations, the mitigation ratio *must* be significantly higher.

MR1-B,
MR2-B
O_CNPS2-16

3.5. Full impacts not entirely mitigated

Mitigation M-BI-8a, pertaining to rare plant species, indicates that "Enhanced and restored occupied habitat shall be equal in extent to the predicted loss of habitat below the 291.8-foot elevation." However the actual area numbers listed as the basis for providing mitigation within this mitigation measure are actually just the areas below the 287.8 foot level, *not* the 291.8 foot level. This is seen clearly from table 5.13-6. Therefore

MR1-B,
MR2-B
O_CNPS2-17

the proposed mitigation areas in M-BI-8a do *not* meet the promised mitigation of compensating for all impacted areas below the 291.8 foot level, which would be over twice the size of the proposed mitigation based on the explicitly mentioned area numbers in the mitigation measure.

Discussion accompanying table 5.13-6 argues that infrequent inundation between the 287.8 foot and 291.8 foot levels would have only a minor impact and thus would be less than significant for rare plant species potentially impacted. But elsewhere the DEIR acknowledges that these are complex ecological communities whose behaviors and responses are not well understood and are hard to predict. It is also acknowledged that rising reservoir levels will, among other things, change the nature of the water table and overall hydrology in surrounding areas, even to and above the 291.8 foot level. Given the broad array of rare plant species being impacted, the assumption that impacts below 291.8 will of necessity by minor is not well founded. And given the serious down sides of failing to adequately mitigate for these rare and sensitive species, erring on the side of caution would be the most prudent and viable way to proceed, therefore mitigation should indeed be designed to compensate for impacted areas below the 291.8 foot level. This is in fact what M-BI-8a says it should do, however the mitigation area numbers listed within the measure do not correctly reflect that intent.

MR1-B,
MR2-B
O_CNPS2-17
cont.

3.6. No mitigation for Arcuate Bush Mallow

No mitigation of any kind is provided for the potential loss of Arcuate Bush Mallow in association with the project. This plant does not currently occur down to the existing high water line in the reservoir, so the assumption that it would be able to do so after reservoir levels are increased is unfounded. Furthermore, as a perennial shrub generally found in relatively dry, upland scrub or chaparral settings, it is potentially susceptible to impacts associated with occasional inundation, a raised water table, or altered hydrology. As such, failure to mitigate for all impacts on this species below the 291.8 foot level is not an acceptable situation.

B10
O_CNPS2-18

3.7. No mitigation for Fragrant Fritillary

As indicated above, this species has a long standing documented presence in the project area, despite the fact that it was not observed during 2006 field surveys. There is a very high likelihood that this species is still present, and was simply missed during 2006 due to variations in flower timing or other circumstances. Failure to provide additional focused surveying for this plant, or to consider potential mitigations for loss of habitat, are a significant oversight.

B9
O_CNPS2-19

3.8. Claimed mitigation outcomes lack solid foundation

It is claimed that proposed mitigations for rare plants and plant communities will reduce impacts to a less than significant level, yet as mentioned above, it is hard to see how such a claim can be justified when the mitigation parameters have been left so terribly undefined. Furthermore, where attempts to justify such claims are presented, all too often those justifications amount to mere expectation or supposition, and are not based on credible science as required by CEQA. For example

- M-BI-8a says it is only *expected* that serpentine spring habitat will form naturally at higher elevations than at present due to the rise in groundwater resulting from higher reservoir operating elevations. This is a supposition, and thus cannot provide a reliable basis for evaluating the viability or efficacy of proposed mitigations. This measure further states that increased flows in existing zones of serpentine seeps *may* also occur naturally if the water demands by non-native trees are removed; again this is a supposition and so cannot be relied upon. Yet the conclusion in the following sentence is that removal of non-native trees, together with the predicted change in hydrology, *will* create suitable mitigation habitat. It is impossible to see the logic here; given that the two suggested impacts of the mitigation are based on assumption and described merely as possibilities, it cannot justifiably be claimed that the mitigation *will* result in suitable habitat.
- Also in M-BI-8a, it is stated that increased habitat for Marin western flax is *expected* to form where non-native woodland and accumulated litter and duff on serpentine soil are removed and grassland restored to the site. Again this is supposition rather than sound science and proof.

MR1-B,
MR2-B
O_CNPS2-20

- Section 5.13.3.2 of the DEIR states that "Because managed reservoir operations do not represent 'natural' conditions, conventional habitat suitability models cannot be applied, and thus the predictions made in this analysis are based on relevant literature and professional judgment, and potential impacts are assessed against a baseline of high variability..." Again, the conclusion is that impacts and mitigation results are variable and difficult to predict, therefore claims of expected success cannot be well justified.
- In several locations in the DEIR it is blithely assumed that both suitable and adequate mitigation habitat can and will be found and that mitigation will in fact succeed. This is not founded in science and fact, and does not provide an adequate basis for evaluation of the feasibility or efficacy of proposed mitigations. Without at least some additional analysis of the true potential for implementation of proposed mitigations, including mitigation site identification, those proposals amount to little more than saying "trust us, things will be ok". This represents a roll of the dice with respect to mitigation, yet we *know for a fact* that rare plants and their habitat *will* be destroyed by the project. Such a situation does not satisfy CEQA requirements that mitigations for known impacts be shown to be viable and effective.

MR1-B, MR2-B
O_CNPS2-20
cont.

3.9. Ongoing monitoring for success is inadequate

As mentioned elsewhere, the most crucial parameters for the proposed mitigations for impacts on rare plant species are simply not defined at this point and so cannot be adequately evaluated as required by CEQA. One of the few parameters that *is* mentioned is the plan for annual surveys of habitat improvements for the first 5 years following the increase in the reservoir level. This plan is entirely inadequate relative to the huge scope of impacts expected (in terms of number of species and importance of impacted populations) and the overall importance of the success of proposed mitigations. In particular:

- Annual surveying cannot adequately monitor for, or allow suitable response to, changing conditions at mitigations sites in a way that will ensure mitigation success. As is acknowledged by the DEIR itself, the conditions of the reservoir and its vicinity are managed and thus not natural, and not covered by traditional habitat modeling techniques. In addition, the reservoir level change will potentially cause changes in the surrounding environment which are not well understood or anticipated. In this dynamic situation, with such a large number of affected and highly important species involved, annual surveys will simply not be adequate to ensure long term success. More frequent and thorough monitoring should be required.
- Establishment of new, viable, permanently self sustaining populations of rare plant species is extremely challenging, and it is entirely inadequate to assume that such populations may be established within a period as brief as 5 years, especially across such a diverse collection of rare plant species. Mitigation plans must provide for longer term monitoring in order to ensure that newly created plant populations are indeed truly viable and self sustaining. All too often, mitigation efforts have involved "hand holding" of rare plant populations at mitigation sites just long enough to get past the end of woefully short monitoring timelines, then after the mitigation period ends the populations are left to their own devices and quickly collapse, resulting in no net mitigation at all.

MR2-B
O_CNPS2-21

3.10. No documented attempt to preserve genetic diversity

The SFPUC's own Watershed Management Policies stress that the watershed shall be managed in a way that preserves and protects the full genetic diversity of rare plant species and plant communities on the watershed (policies V8, W1, W2, W4). However proposed mitigations do not define plans for preservation of the full genetic diversity across all segments of those populations expected to be impacted by the project. Mitigation which relies merely on numbers of plants or extent of habitat rather than preservation of full genetic diversity cannot be considered viable or adequate.

B16
O_CNPS2-22

4. Issues Regarding Impact Significance

4.1. Translocation mitigation does not reduce significance

The proposed mitigation by translocation (the establishment of new plants away from the project impacts, also known as ex situ conservation) is not supported by CNPS. Our organization has a specific standing policy, "CNPS Policy On Appropriate Application Of Ex Situ Conservation Techniques," which clearly defines our position on this matter, and in particular stresses that "Losses of plant populations considered 'significant' under (CEQA)... cannot be mitigated to less-than-significant levels using ex situ conservation techniques." This is based both on the difficulties and low success rates of such mitigation techniques, as well as an acknowledgment that rare plant species generally are in a situation where loss of any existing individuals or habitat represents a significant negative impact on the long term viability of the species.

In this case, with so many species being impacted through direct loss of individuals and habitat, and with so many important populations being significantly reduced in size, it is our position that the impacts must be considered *highly* significant, regardless of any proposed mitigations by translocation. In particular, impacts BI-2, BI-3, BI-5, BI-7, BI-8, and BI-10 must all be considered as SU (i.e. significant and unmitigated) rather than SM.

MR1-B, MR2-B
O_CNPS2-23

4.2. Claim of reduced significance relies on undefined mitigation

Section 1.7 of the DEIR states that the majority of significant impacts due to the project, including impacts on rare plant species and plant communities, would be reduced to less than significant levels through implementation of the "recommended mitigation measures". But as indicated above, this claim cannot be evaluated or substantiated because many of the most critical parameters of the intended mitigations are in fact not described, and instead are deferred to a future data. This is a violation of CEQA requirements (often described as a Sundstrom violation) which specify that mitigation measures must be adequately defined as part of the EIR process itself, and in such a way that a skeptical public can adequately evaluate their adequacy and viability.

4.3. Watershed Management Policies stress preservation

A large number of SFPUC's own Watershed Management Policies for the project area specifically indicate that emphasis should be placed on preserving and restoring existing populations of rare plant species and plant communities, as opposed to allowing their destruction and attempting to replace them elsewhere. This includes policies V5, V6, V7, V10, and V13. The proposed project therefore conflicts with SFPUC's own policies, and this conflict must be considered significant. Given the repeated stressing in those policies of preserving and restoring existing habitat rather than creating new habitat, there is no justification for claims that proposed mitigations for rare plants and plant communities (which rely almost entirely on creating of new habitat) reduce this impact to less than significant.

Furthermore, per the SFPUC's own policies, any habitat considered truly suitable for mitigation via restoration/creation of new plant populations should in fact already be targeted for such efforts as part of the implementation of those existing policies, regardless of any projects or impacts elsewhere in the watershed. Allowing such suitable restoration areas to be used to *offset* the destruction of known viable habitat elsewhere violates the management policies and in effect rewards SFPUC for not adequately implementing its own management policies in the first place. Such a situation cannot be considered as reducing the impacts of the project to less than significant since such efforts as proposed in the mitigations should in fact be part of the watershed management practices *anyway*.

B16
O_CNPS2-24



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April 14, 2010

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<http://bikesiliconvalley.org>

Re: DEIR for the Lower Crystal Springs Dam Improvements Project

Dear Mr. Wycko:

The Silicon Valley Bicycle Coalition is a 700 member organization that works to improve conditions and empower bicyclists in San Mateo and Santa Clara Counties. We have reviewed parts of the DEIR for the Lower Crystal Springs Dam Improvements Project and have examined the proposed detours for bicycles around the project while Skyline Blvd. is closed for the period of construction, which combined with San Mateo County's bridge construction project, will be in excess of 32 months. Most of our members have cycled the route along Cañada Rd and Skyline Blvd. as it is a popular cycling route that provides a direct and convenient routing along the central corridor of the SF Peninsula.

The closure of this key route for nearly 3 years will impact cyclists far more than noted in the DEIR. The DEIR suggests that cyclists have two alternatives to detour around the construction site: Either using a combination of the Ralston multi-use trail, Polhemus and Crystal Springs; or using a combination of Bunker Hill, Polhemus and Crystal Springs. What is not considered, but provides the most direct route, is to allow cyclists use of the shoulders of I-280 between Bunker Hill and Black Mountain Roads. This alternative route would be advantageous to many cyclists.

The use of the shoulders of I-280 merits the highest consideration. Currently, cyclists have access to two sections of I-280 just north of the dam site: Trousdale to Hillcrest, and Larkspur to SR35/Skyline. Consequently, the use of the freeway shoulder by cyclists does have a precedent with CALTRANS. As with these two examples, the Bunker Hill to Black Mountain section is a simple on/off the freeway with no crossings of interchanges, other than a closed rest-stop northbound, and can be safely done. Motor vehicle speeds are not a real concern. Many experienced cyclists are routinely passed by motorists at speeds of excess of 65 mph on other highways having narrow or no shoulders.

R5
O_SVBC-01

R8
O_SVBC-02

Silicon Valley Bicycle Coalition PO Box 8447 San Jose CA 95144

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Below, we outline our concerns and provide more details in the attachment. Our analysis was done on the basis of cycling the routes.

- Both of the proposed detours nearly double the distance and the climbing for cyclists.
- There is a quarter mile section of Bunker Hill with a grade in excess of 10% which is considered extremely steep (note that maximum grades on Interstate Highways rarely, if ever, exceed 6%). Many cyclists will have to dismount and walk.
- The pavement of the Ralston trail is in poor condition with weeds growing through cracks in the pavement. There are some drainage problems which could affect the utility of this route during and after heavy rainfall.
- The DEIR should address the problem of regular sweeping of the trail to prevent build-up of debris.
- The section of the Ralston trail near Cañada is about 8-feet wide with steep grades and sharp corners. The sight-lines are limited. This section of the trail probably does not meet the standards for a Class I bike facility outlined in the CALTRANS Highway Design Manual, Chapter 1000 and consequently should be consider potentially hazardous.
- It should be noted that the Ralston trail is a multi-use facility and that diverting large groups of cyclists onto this facility will lead to conflicts and may pose a safety hazard to all users; especially in areas where the trail is narrow and with limited line of sight.
- The button for the pedestrian activated signal at the Ralston's trail intersection with Ralston/Polhemus and the SR92 exit has two problems. First, it does not offer a protected left turn onto Ralston/Polhemus. Second, the existing button for the signal is placed in an awkward spot for cyclists since it is adjacent to a depression for a drainage grate. A possible solution to both of these problems is to install either pavement loops or another button north of the existing button, such that left turns can be made without conflict with left-turning motorists from the SR92 exit.
- The detour needs to be well marked for cyclists who are not familiar with area. As an example, the Ralston trail is not clearly marked in advance of its entrance for northbound cyclists on Cañada Road.
- The DEIR notes that weekend parking is primarily along the shoulders of Skyline and Crystal Springs. The DEIR needs to consider this area more than just a parking lot as it is a staging area for the popular Sawyer Camp trail. Users will be paying attention to numerous items such as taking their bikes from the car, adjusting clothing, and controlling their kids. They may not be paying attention to the occasional large trucks associated with the construction; it is important that the truck drivers be made well aware of this hazard.

R6
O_SVBC-03

R9
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R9
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R1, R9
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O_SVBC-08

R5, R10
O_SVBC-09

- At the bottom of Page 5.6-19, the DEIR makes a confusing or misleading statement; *“However, on weekends (when bicycle travel is greater), the potential for conflicts from increased truck traffic on Crystal Spring Road would be greater Implementation..., which would require post ... detour signs ... of nearby recreational facilities ... would reduce this impact”*. Cyclists and trucks will still need to share the road at many places since the proposed detour does not separate the two groups of users. We are concerned that the signs will do nothing to physically reduce the conflict.

R5, R10
O_SVBC-09
cont.

In view of the problems stated above, we suggest that the EIR be changed to better accommodate cyclists in the detour. The detour proposed by the Draft has a significant impact for cyclists and the proposed mitigations do not go far enough to reduce that impact. We suggest that:

- Improvements be made to the Ralston trail to better accommodate cyclists including bringing the trail up to CALTRANS standards for a Class I facility, widening and improving sight-lines, and providing a protected turning phase at the light with Ralston.
- Recognition that Bunker Hill is not a suitable alternative to many cyclists as it is too steep.
- Work with CALTRANS to provide temporary access to the shoulders of I-280; this has the potential of removing large, fast groups of cyclists using the Ralston trail and reducing the impact to other users of that trail.
- Provide continual truck-driver education about sharing the road with cyclists and awareness of traversing areas where people are not particularly attentive to traffic around them.

R9
O_SVBC-10

R6
O_SVBC-11

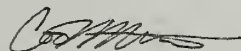
R8
O_SVBC-12

R10
O_SVBC-13

Lastly, we feel that public notice of the project, and especially the time limit for public comment on the DEIR may not have been properly distributed to all stakeholders. As a recognized stakeholder, the SVBC was not noticed in a timely manner, especially San Mateo County's project, in order that it might participate in public process. Therefore it is our earnest request, in light of this breach of stakeholder outreach, that our comments be considered timely.

INT3
O_SVBC-14

Sincerely,



Corrine Winter
Executive Director

cc: James Porter, San Mateo County Public Works Director,
jporter@co.sanmateo.ca.us
Ina Gerhard, Bicycle Coordinator, CALTRANS District 4,
Ina.Gerhard@dot.ca.gov
Erika Lovejoy Erika.Lovejoy@sfgov.org

Attachment: Other notes on DEIR

1. The County Bike map found on the C/CAG web site has errors.
 - There are no bike lanes (Class II) on Ralston from Polhemus to Lyall/Pullman,
 - The bike lane on Polhemus is not continuous (it probably stops at the boundary between the City and County line. (Page 5.6-6)
2. Northbound on Polhemus at De Anza, the bike lane is designated to the right of the right-turn only lane which is a hazard and is potential in conflict with the CALTRANS Highway Design Manual, Chapter 1000. (see picture below)
3. The statistics listed in Table 5.6-3 are questionable. It states that the numbers are counts for the highest one-hour interval for a Sunday and a Weekday. It also states that the sampling time covered a 2 hour period sometime each in May and August. We are left wondering whether the total field time was 8 hours or, could

it be more; that is the samples were done over 4 Sundays (or Wednesdays) in both May and August. If it is the former, then these statistics could be considered meaningless as it is possible that, for instance, extremely hot weather could have minimized bike traffic for the small sampling time.

R1
O_SVBC-15

R9
O_SVBC-16

R2
O_SVBC-17



Narrow Ralston Trail with bad pavement



Informal parking near Sawyer Camp on Skyline, Sunday 4 April



Bike lane to right of turn lane; Polhemus and De Anza; non-conforming design



SAN FRANCISCO PLANNING DEPARTMENT

PUBLIC HEARING ON THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION'S LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT APRIL 6, 2010 - 6:30 TO 8PM

COMMENT CARD

Privacy Notice: Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—becomes part of the public record. Unless indicated by you otherwise, you will automatically be added to the EIR notice mailing list by submitting this form.

Name: JOAN M. BARDET (Mrs William P. Bardet)
 Affiliation (such as organization you belong to, if applicable): _____
 Title: _____
 Address: 565 EL CERRITO AVE, HILLSBOROUGH, CA 94010
 E-mail: n/a
 Phone: (415) 342-6048
 Fax: n/a

Your input on the proposed project is greatly appreciated. Please provide your comments on the Draft Environmental Impact Report prepared for the Lower Crystal Springs Dam Improvements Project, including determinations on potentially significant impacts, ways to mitigate those impacts, and feasible alternatives. Comments should be sent to the San Francisco Planning Department, Attn: Bill Wycko, Environmental Review Officer, LCSDI Draft EIR Comment, 1650 Mission Street, Suite 400, San Francisco, CA 94103 or provided by fax to 415-558-6409 or e-mail to erika.lovejoy@sfgov.org. Comments will be accepted until 5:00 p.m. on Friday, April 16, 2010.

Comments: My husband Bill & I have lived at 565-El Cerrito in Hillsborough since 1976. We moved to our then newly-built house because of its location near downtown San Mateo & because of its beautiful lot along San Mateo Creek - one Redwood - 170' x 170' - rare outflows from Crystal Springs Reservoir.

I write to voice our concerns for those who live or work along the creek - concerns that may be impacted significantly by changing the height of reservoir water levels & by the increased volume force of out-flows over the dam as they race downstream, Snake & Smith School, Tunnel under Mills Hospital & other residential tracts on flatland on their way to the Bay.

Please continue your comments on the reverse side of this comment card. >

H7
I_Bardet-01

H4
I_Bardet-02



SAN FRANCISCO PLANNING DEPARTMENT

PUBLIC HEARING ON THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION'S LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT APRIL 6, 2010 - 6:30 TO 8PM

RECEIVED
APR 14 2010
CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
M.E.A.

Comments continued:

In the early 70s, in a wet winter, water would cascade over the dam when reservoir levels rose well above normal. During our 34 years on El Cerrito Avenue we have experienced one purpose out flow from this dam. The neighborhood was warned beforehand to remove any furniture from creekside before the arrival of the water. During one particularly wet winter, the creek rose above private retaining walls, raising fears of flooding. Between these events there have been two severe droughts, the latest still threatening, and now we face some plausible effects of global warming: less snowfall & increased rainfall in the Sierra, leading to swollen rivers & reservoirs, and, in this case, for Crystal Springs dam, more frequent & greater outflows.

My husband & I were not, to our knowledge, informed of any meetings for scoping of the EIR Draft report, although such were held, as we learned from speakers at the April 6, 2010, public hearing at Hillsborough Town Hall of the SFPUC dam project. Thus, perhaps our concerns may have been addressed previously.

Thank you for your attention.

John M. Bardet

H7
I_Bardet-03

INT1
I_Bardet-04

From: [Joshua Cooperman](#)
To: erika.lovejoy@sfgov.org
cc: AConstantouros@HILLSCA.ORG; aranii@hcsd.k12.ca.us; JGCooperma@aol.com
Subject: Crystal Springs EIR drafts- comments
Date: 04/16/2010 04:58 PM

Erika-

In supplementing my comments at the hearing in Hillsborough on April 6, I want to emphasize the following:

1. The safety of the dam is the BIGGEST environmental issue respecting this EIR.

It is the big elephant in the room, which you prefer to ignore.

As the water level behind the dam will be increased by at least 4 foot following the upgrades, the integrity of the dam must be considered in great detail in this EIR, as the volume of water behind it will increase from the current levels, which could result in adverse environmental consequences. This EIR is deficient without such an analysis.

Yet, despite several thousand pages of reports and evaluations in the draft EIR, I have found only one sentence on page 3-7 which discusses this precise issue and you dismiss it as unworthy of further consideration, relying on evaluations by another agency, the State Division of Safety of Dams, with no citation or justification for your reasoning.

However, in discussing this with that State Division, they specifically indicated their most recent review was VERY limited in scope to a file review of the existing data, without further investigation. While the State in our conversation was not in a position to provide other observations or recommendations, it specifically did not imply that such review would not be beneficial or that other issues which the State did not observe under its limited circumstances might become apparent.

Indeed, the EIR concedes the last physical inspection with corings, etc. occurred in 1977, over 30 years and eons of technology ago. As even your managers concede that good foundations and good foundation contact is advisable, new corings should be performed to ensure that there has been no deterioration in the dam in the interim.

This should be again completed by an independent engineering group, and reviewed in a totally transparent manner with ALL the constituencies in Hillsborough, San Mateo, Burlingame, Millbrae and the County, to ensure that

G1, GS2
I_Cooperman2-01

the safety of our community is not compromised, nor are shortcuts taken, as I believe may have occurred in a prior instance with the actions of the SF PUC.

G1, GS2
I_Cooperman2-01
cont.

2. The cost of the study is minimal compared to the dangers to your enterprise from not acting.

As an enterprise fund, your business is selling water to other agencies and to San Francisco residents. While I applaud your efforts and that of the State Seismic Safety Commission to proceed on upgrading your system, a paramount concern should be ensuring the integrity of the reservoir. Otherwise, the funds spent on the water delivery system improvements from the Sierra to Crystal Springs will be for naught. Without water revenues, there will be great financial pressure on your agency and that of the City and County. AND, without water to sell for the BAWQSCA wholesalers, their jurisdictions will face economic consequences, both for the water enterprises as well as the general economy.

G1, G6
I_Cooperman2-02

Indeed, the San Mateo County inundation maps show that wide areas of downtown San Mateo, extending to the Bay and Foster City, will be impacted by an adverse event to the dam, as well as the specific areas of Hillsborough where I reside. You can review these maps on the County's website. Affected institutions are South School, Crystal Springs Uplands School, Mills Hospital, the new San Mateo City Main Library, as well as the downtown San Mateo commercial and business area.

H6
I_Cooperman2-03

As Hillsborough has over \$40 million in water and sewer debt outstanding, any loss of revenues to it will be highly detrimental, and directly adversely affect myself as a resident using the water, a ratepayer and a local citizen.

G7
I_Cooperman2-04

3. The cost of any independent study is minimal and can be incorporated into your rate base. As for any timing delays, this study should be commenced immediately, particularly before the repairs begin, in the event changes to the contemplated repairs need occur due to findings from an engineering evaluation of the dam.

To provide objectivity, the local water agencies should also have their engineers review the independent findings.

G1, G6
I_Cooperman2-05

4. Any independent findings would be available for inspection by future regulators, commissioners and interested parties, and could provide the Agency with justification that it left no stone unturned in ensuring the safety and integrity of its improvements program, this EIR process and the citizens of both San Francisco and the Peninsula. Anything less will only serve to emphasize and highlight potential deficiencies in your agency's process here and in its improvements program.

Respectfully submitted,

JOSHUA COOPERMAN
15 Creekwood Way
Hillsborough, CA 94010

650-619-0007; fax 650-348-7684
jgcooperma@aol.com



Washington University in St. Louis

ARTS & SCIENCES

DEPARTMENT OF BIOLOGY

Tiffany M. Knight, Ph.D.

Associate Professor of Biology

April 16, 2010

To whom it may concern

The purpose of this letter is to provide comments on the mitigation plan for *Cirsium fontinale* var *fontinale* (hereafter *Cirsium fontinale*) in the Lower Crystal Springs Dam Improvements Project (MEA Case No. 2006.0536E). I have conducted ecological research on this species in natural populations and in the greenhouse since 2006 in collaboration with two graduate students in my lab, Kristin Powell and Steven Kroiss. I hope that you will find my suggestions useful and consider incorporating them into your mitigation plan. My recommendations aim to greatly improve the mitigation of this species and would be relatively easy and inexpensive to implement. I would be happy to discuss any of these suggestions in further detail.

First, I will outline some concerns that I have about the current mitigation plan for *Cirsium fontinale*.

Concern #1: Definition of endemism in the EIR, and implications of this definition for *Cirsium fontinale*

On page 15, endemism is defined as "species that are geographically restricted". However, this is a very simplistic definition. It suggests that the species is dispersal-limited, and if moved to other locations, populations would thrive. Endemism is typically more than range restriction, and in most cases the term is used for species with specific, narrow habitat requirements.

In the EIR, habitat associations of *Cirsium fontinale* include serpentine, grasslands and woodlands. However, this species is typically found in serpentine habitats, and likely has strong preferences for this habitat type. Its existence in grassland habitats might be due to runoff of nutrients from serpentine soils into those grasslands and its persistence in woodlands could represent a sink population receiving propagules from a large serpentine source population. While habitat preferences of *Cirsium fontinale* have not been extensively studied (but should be, as I outline below), the fact that a serpentine habitat supports the largest population of this species suggests that this habitat type allows high fitness of the plant.

Concern #2: The description of acreage lost due to the dam improvements conceals the actual damage that will occur to the largest extant population of *Cirsium fontinale*

The discussion of amount of *acreage* lost due to Lower Crystal Springs Dam Improvements Project provides a misleading view of the project's effects on *Cirsium fontinale*. While only 50% of the acreage will be lost, a much higher fraction of the

B2
I_Knight-01

MR2-B
I_Knight-02

Cirsium fontinale individuals and habitat will be lost. Specifically, all of the serpentine habitat will be lost, which contains the vast majority of the individuals in the population.

Concern #3: The mitigation plan for *Cirsium fontinale* is vague and lacks proof of concept for many of the proposed activities.

I have four main concerns with the current plan:

- 1) Tree removal alone might be insufficient to create a habitat that will support a viable population of *Cirsium fontinale*.
- 2) Tree removal will create a disturbed habitat that might favor weedy annual plants that compete with the monocarpic perennial, *Cirsium fontinale*.
- 3) Transplantation might not work for *Cirsium fontinale*. There is no proof of concept that transplants will survive when moved from natural populations or greenhouse settings to the proposed mitigation site.
- 4) There is not a specific plan to evaluate the success of the mitigation (i.e., what will be measured), and how long the mitigated population will be monitored for. Because *Cirsium fontinale* takes on average 4 years to advance from the seedling to reproductive stage class, populations should be monitored for multiple generations for at least 10 years to ensure that a viable population has been created.

Below, I outline specific suggestions that would allow for better mitigation planning for *Cirsium fontinale* and better quantification of the success of the mitigation.

1) Evaluate the relationship between soil type and the density and fitness of *Cirsium fontinale*.

For the Crystal Springs population, establish several transects that capture the range of habitat types in which this *Cirsium fontinale* is found (serpentine, grassland, woodland), measure soil characteristics (macro nutrient levels, the Ca:Mg ratios, pH, moisture) and measure plant density, size and reproductive fitness of mature plants in the summer of 2010. This information can be used to quantify whether the species has higher fitness in the serpentine habitat compared to the other habitat types. I suggest that a similar analysis in all other locations of *Cirsium fontinale* in the same time frame, so that habitat associations and fitness are well established for this species. This will pinpoint the conditions that are necessary for viability of the species. This would be a relatively simple, inexpensive and short-term study that provides robust information that will help with mitigation site selection and preparation. This will help avoid failed mitigation that would occur if *Cirsium fontinale* seeds or transplants are placed in a site that corresponds to low fitness.

2) Survey locations in addition to the proposed woodland that might serve as appropriate mitigation sites.

Cirsium fontinale has a strong association with serpentine bunchgrass vegetation. In 2011, serpentine bunchgrass habitats that do not currently contain *Cirsium fontinale* could be identified and soil could be tested and compared to soil types that correspond to high fitness of *Cirsium fontinale*. With this information, ideal locations for seeds or transplants of *Cirsium fontinale* could be identified. This would also be a short-term and inexpensive survey to conduct that would provide robust information that would help with mitigation site selection and preparation.

3) Provide proof of concept for *Cirsium fontinale* transplantation.

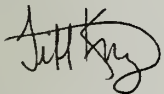
We have found that *Cirsium fontinale* seeds are easy to germinate and plants grow rapidly in the greenhouse (Powell and Knight 2009). However, it is untested whether greenhouse-grown juvenile plants would thrive if transplanted into habitats for mitigation. It is possible that all the plants would die of transplant shock. Similarly, it is possible that plants moved from one site to another would also suffer high mortality due to transplant shock. Transplantation of plants may allow for rapid mitigation if these plants were able to survive, however, a pilot experiment with greenhouse-grown and wild transplants is necessary to establish proof of concept. Such an experiment could be short-term (monitor transplants for a few months) and inexpensive.

Citation: Powell, K.I. and T.M. Knight. 2009. Effects of nutrient addition and competition on biomass of five *Cirsium* species (Asteraceae) including a serpentine endemic. *International Journal of Plant Sciences* 170: 918–925.

4) Monitor fitness of all restored seeds or transplants for 10 years.

Based on our demography of two populations of *Cirsium fontinale* from 2006-2010, we find that plants take on average 4 years to grow from seedlings to reproductive individuals (Steve Kroiss and Tiffany Knight, unpublished data). Given the perennial nature of this plant, newly established populations should be monitored for 10 years. Demographic data, such as the survivorship of seedlings and juveniles, the seed production of mature plants, and the germination of seeds should be monitored *in situ*. With this data, population viability analyses can be conducted to examine the probability that a viable population has been created. While this would require a relatively long period of monitoring (10 years), I note that the amount of effort required in any individual year is low. We spend only 2 weeks per year per population to collect very high quality demographic data that provides a good indicator of plant fitness and population dynamics.

Sincerely,



Tiffany Knight
Associate Professor
Department of Biology
Washington University in St. Louis

B17
I_Knight-03
cont.

From: Steve Lawrence
To: Erika.Lovejoy@sfgov.org
Subject: Comment to Lower Crystal Springs DEIR
Date: 03/04/2010 09:56 AM

Water needs to be delivered throughout the period of WSIP's construction. Crystal Springs Reservoir is a key local reservoir. During its construction, will the project affect how much water the reservoir stores? Can release? With this project in construction (in 2011), please explain how the regional system will move sufficient water west, from mountains to Bay Area, what the risks are, and how risk of running dry will be minimized should an earthquake or other catastrophic event strike our area. Note that the Calaveras Dam project may be going, too; will storage there be diminished? Does that project, or others, have a combined effect on what water will be available should an earthquake strike during WSIP construction?

PD9
I_Lawrence-01

Steve Lawrence

From: Darrellmichael3@aol.com
To: erika.lovejoy@sfgov.org
Subject: Crystal Springs watershed improvement
Date: 04/24/2010 11:49 AM

Good day to you. I missed the note about the meeting they had in April. I run many times a week at Crystal Springs near Bunker Hill Road. I understand they will start to raise the roadwayisn't that in early 2011? I forgot the months.

PD11
I_Michael-01

The parking will be a huge issue. We truly need that little parking lot, just south of the entrance to Sawyer Camp. Will there be anything they can do to make room for about 15 cars when they have to revamp that area? Maybe we could all chip in for a bus bridge or such...just an idea.

R4, T2
I_Michael-02

Thank you, kindly,
Darrell

From: [M Naughton](#)
To: Erika.Lovejoy@sfgov.org
Subject: LOWER CRYSTAL SPRINGS DAM
Date: 03/04/2010 02:47 PM

Does the EIR just released on this project include any maps indicating how local roads will be affected? If so, in what section of the EIR?
Thank you.

T1
I_Naughton-01



SAN FRANCISCO PLANNING DEPARTMENT

PUBLIC HEARING ON THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION'S LOWER CRYSTAL SPRINGS DAM IMPROVEMENTS PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT APRIL 6, 2010 – 6:30 TO 8PM

COMMENT CARD

Privacy Notice: Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—becomes part of the public record. Unless indicated by you otherwise, you will automatically be added to the EIR notice mailing list by submitting this form.

Name: Margaret Stone Pace
 Affiliation (such as organization you belong to, if applicable): _____
 Title: _____
 Address: 30 Heather Pl., Hillsborough
 E-mail: margo@pace.org
 Phone: 650 579-7631
 Fax: 650 579-7451

Your input on the proposed project is greatly appreciated. Please provide your comments on the Draft Environmental Impact Report prepared for the Lower Crystal Springs Dam Improvements Project, including determinations on potentially significant impacts, ways to mitigate those impacts, and feasible alternatives. Comments should be sent to the San Francisco Planning Department, Attn: Bill Wycko, Environmental Review Officer, LCS DI Draft EIR Comment, 1650 Mission Street, Suite 400, San Francisco, CA 94103 or provided by fax to 415-558-6409 or e-mail to erika.lovejoy@sfgov.org. Comments will be accepted until 5:00 p.m. on Friday, April 16, 2010.

Comments: Very concerned with any closure
that would affect access to the Sausalito
Camp trail.

R3
I_Pace1-01

Please continue your comments on the reverse side of this comment card.

The Draft EIR is available online at www.sf-planning.org.

APPENDIX C&R B

Public Hearing Transcripts

ORAL COMMENTS RECEIVED ON THE DRAFT EIR

Comment Letter ID	Name of Commenter	Organization/ Affiliation	Page
April 6, 2010 Public Hearing – Hillsborough Town Hall			
O_CASportFish1	Richard Izmirian	California Sportfishing Protection Alliance	C&R B-19
I_Moberg	Fan Moberg	N/A	C&R B-22
I_Pace2	Stephen Pace	N/A	C&R B-24
I_Cooperman1	Josh Cooperman	N/A	C&R B-24
April 8, 2010 Public Hearing – San Francisco Planning Commission			
A_SFPC1	Commissioner Kathrin Moore	San Francisco Planning Commission	C&R C-45
A_SFPC2	Commissioner Michael Antonini	San Francisco Planning Commission	C&R C-47
A_SFPC3	Commissioner Hisashi Sugaya	San Francisco Planning Commission	C&R C-48

Each bracketed comment consists of a comment letter ID (indicated in the table above) as well as a topical code. The topical codes are indicated in square brackets below:

General Comments [G]
 Introduction and Background [INT]
 Project Description [PD]
 Cultural and Paleontological Resources [C]
 Transportation and Circulation [T]
 Noise and Vibration [N]
 Recreation [R]
 Biological Resources [B]
 Geology and Soils [GS]
 Hydrology and Water Quality [H]

For comments that are addressed by master responses only, the following topical codes are used:

Master Response on Lower Crystal Springs Dam Safety Issues [MR-G]

Master Response on No Net Loss of Habitat Functions and Services [M1-B]

Master Response on Special-status Plants and Serpentine Habitats Regarding Data Adequacy, Impact Analysis, and Mitigation [MR2-B]

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4 SAN FRANCISCO PLANNING DEPARTMENT
5 SAN FRANCISCO PUBLIC UTILITIES COMMISSION
6 LOWER CRYSTAL SPRINGS DAM
7 IMPROVEMENT PROJECT
8 PUBLIC HEARING ON THE
9 DRAFT ENVIRONMENTAL IMPACT REPORT
10

11 April 6, 2010
12

13 Hillsborough Town Hall
14 1600 Floribunda Avenue
15 Hillsborough, California
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24

25 REPORTED BY: DEBORAH FUQUA, CSR #12948

A P P E A R A N C E S

San Francisco Planning Department:

Erika Lovejoy, Senior Environmental Planner
(Moderator)

San Francisco Public Utilities Commission:

Tasso Mavroudis, Project Manager

Chu Liu, Project Engineer

Anna Roche, Environmental Project Manager

Nicole Ziman, Communications Staff

ESA + Orion, Project Consultant

Joyce Hsiao, Project Manager

Kelly White, Assistant Project Manager

Allison Chan, Project Associate

PUBLIC COMMENT:

PAGE:

RICHARD IZMIRIAN

17

STEPHEN PACE

21

FAN MOBERG

19

JOSH COOPERMAN

22

---o0o---

1 Tuesday, April 6, 2010

6:36 o'clock p.m.

2 ---o0o---

3 P R O C E E D I N G S

4 ERIKA LOVEJOY: Good evening everyone, and welcome
5 to tonight's public hearing on the Draft Environmental
6 Report for the Lower Crystal Springs Dam Improvement
7 Project. My name is Erika Lovejoy. I'm a senior
8 environmental planner with the Major Environmental
9 Analysis Division of the San Francisco Planning
10 Department. I'm going to be the moderator for
11 tonight's hearing.

12 The San Francisco Planning Department is the
13 lead agency under CEQA for the environmental review of
14 projects sponsored by or within the City and County San
15 Francisco. The San Francisco Public Utilities
16 Commission is the project sponsor.

17 This is the agenda for tonight's hearing. In
18 a moment, Tasso Mavroudis, the project manager for the
19 Lower Crystal Springs Dam Project, is going to make a
20 brief presentation describing the proposed project.
21 Following the project overview, I will provide some
22 reminders and instructions and open the hearing for
23 public comment.

24 After the close of public comment, I'm going
25 to provide you some information on further

1 opportunities for you to submit comments on the Draft
2 Environmental Impact Report.

3 I'd like to introduce some of the key people
4 who will be working on this project. Again, the San
5 Francisco Planning Department is responsible for
6 environmental review of the proposed project. And I am
7 the environmental review coordinator for the project.

8 Also here we have members of my consultant
9 team from ESA + Orion. Joyce Hsiao is the project
10 manager. Kelly White is the assistant project manager.
11 Allison Chan is a project associate on the project.

12 And then the San Francisco Public Utilities
13 Commission, again, is the project sponsor. And that
14 team is represented by Tasso Mavroudis, again, who is
15 the manager. Chu Liu is the project engineer. Anna
16 Roche is the environmental project manager. And Nicole
17 Ziman is the Public Utility Commission's communication
18 staff assigned to the project.

19 We also have a court reporter over here who is
20 going to be recording everything for the evening.

21 After the hearing is closed, please, if you
22 have any questions regarding the project, those should
23 be directed to the Public Utilities Commission staff.
24 If you have any questions regarding the environmental
25 review or the Draft Environmental Impact Report, please

1 come talk to me.

2 But I'd like to emphasize the fact that any
3 comments that you make will not be part of the public
4 record outside of -- if you have questions and you
5 talked to folks before I got started with the hearing
6 or, after I close the hearing, you chat with people and
7 ask questions, that's not part of the public record.
8 We want your comments to be officially responded to.
9 You need to either speak tonight, submit comments in
10 the box in the back, or submit written comments to the
11 Planning Department. And I'll explain more about how
12 you can do that later.

13 So just a few reminders for the hearing
14 tonight. Please sign in at the registration table if
15 you haven't already. There's handouts available back
16 there for everybody. Please fill out a speaker card if
17 you'd like to make some verbal comments tonight, and
18 hand that to Kelly White over here. If you have any
19 written comments, we have some written comment sheets.
20 you can write them on those. Or if you have some other
21 more detailed written comments, you can also include
22 those in the box, or you can hand them to me.

23 If you have a cell phone, I'd appreciate it if
24 you'd turn that off right now.

25 All right. Tasso Mavroudis is going to be

1 providing some background on the project.

2 TASSO MAVROUDIS: Thank you, Erika.

3 Good evening, folks. Again, I'm Tasso
4 Mavroudis. I'm a project manager with the San
5 Francisco Public Utilities Commission, and I manage the
6 Lower Crystal Springs Dam Improvement Project.

7 Just to give you an idea of what the PUC does,
8 we provide drinking water to 2 1/2 million customers in
9 Alameda, Santa Clara, San Mateo, and San Francisco
10 counties. Our Hetch Hetchy water is so pure, we don't
11 have to filter it. We have an exemption from the
12 federal government because our water is so pure.

13 We also generate clean hydropower for city
14 facilities such as Muni and the airport. And we
15 collect and treat all of the storm water and wastewater
16 for the county. We treat it.

17 The PUC owns and operates the Hetch Hetchy
18 water system shown here. It spans from the Yosemite
19 National Park into the San Francisco Peninsula, about
20 135 miles. Much of the system was built more than a
21 century ago. It's aging and in need of upgrading.
22 Thus, in late 2002, the PUC embarked on a multi-year
23 \$4.6 billion capital improvement program to repair,
24 replace, and upgrade the water system. The Water
25 System Improvement Program, the W.S.I.P or WSIP, as we

1 call it, includes over eight projects that are spread
2 out over seven counties including San Mateo County.

3 Lower Crystal Springs Dam resides in the
4 Crystal Springs watershed, owned and maintained by the
5 San Francisco PUC. It's located in unincorporated San
6 Mateo County about 12 miles south of San Francisco and
7 three miles west of the city of San Mateo.

8 This slide shows the Crystal Springs-San
9 Andreas watershed. This is a blowup of the Peninsula
10 here. Here's San Mateo. Here's Half Moon Bay. This
11 map also shows the general location of other proposed
12 projects in San Mateo County. And these projects are
13 described in detail in the EIR.

14 Lower Crystal Springs Dam construction was
15 completed in 1890. It's a 140-foot-high mass concrete
16 dam with a span of 600 feet between the abutments. And
17 it's interesting to note that, being situated about 400
18 feet east of the San Andreas fault, the dam survived
19 the 1906 earthquake and virtually every other
20 earthquake in between, including the 1989 Loma Prieta,
21 without any other damage.

22 And I'd like to call your attention to the
23 Skyline Boulevard Bridge here, which is owned and
24 operated by San Mateo County. San Mateo County will be
25 replacing that bridge in coordination with the PUC's

1 dam project.

2 Lower Crystal Springs is part of the Peninsula
3 water storage supply system. And it is a key component
4 of the Crystal Springs-San Andreas transmission system.
5 The proposed project is a hydraulic upgrade of the dam
6 facility required to address deficiencies identified by
7 the California Department of Water Resources, Division
8 of Safety of Dams, "DSOD" for short. Because of
9 hydraulic deficiencies, the DSOD imposed restrictions
10 on reservoir operating levels and mandated upgrades to
11 the dam.

12 There are seven key objectives listed in the
13 EIR, and they're all shown here. Two key objectives
14 that encompass these are complying with the DSOD
15 directive by hydraulically upgrading the dam and
16 meeting the Water System Improvement Program levels of
17 service goals.

18 With respect to the hydraulic upgrade of the
19 dam, in 1983, the Division of Safety of Dams determined
20 that the Lower Crystal Springs Dam could not safely
21 pass what is termed the "probable maximum flood," which
22 is DSOD's required spill capacity of the dam.

23 Now, probable maximum flood, or "PMF" as we
24 engineers like to call it, denotes the worst case
25 theoretical flood in a particular drainage area.

1 DSOD's analysis concluded that the current
2 spillway and stilling basin for the dam are undersized
3 and in need of upgrade. And until these upgrades are
4 implemented, Safety of Dams mandated operating levels
5 be restricted, which required the PUC to lower the
6 maximum water level for Crystal Springs by eight feet,
7 resulting in a 16 percent loss of capacity for the --
8 source capacity for the reservoir. That equates to
9 about 2.6 billion gallons of lost water.

10 This is a close-up of the Crystal Springs
11 watershed, some landmarks here. This is San Mateo.
12 You can't see it, but Hillsborough is over here,
13 Highway 92, which crosses the Crystal Springs Reservoir
14 system. Highway 280 runs along here. This is Lower
15 Crystal Springs Reservoir. This is Upper Crystal
16 Springs Reservoir.

17 The highlighted areas denote where
18 construction work will occur on the project.

19 Lower Crystal Springs Dam will see the lion's
20 share of construction. Sampling Station No. 5 down
21 here is really a small component of the project. The
22 project area also encompasses both reservoirs. And
23 this is because we will be restoring historic storage
24 levels.

25 This is a close-up, bird's-eye view of Lower

1 Crystal Springs Dam here. This is the -- this is
2 Skyline Boulevard, and the Skyline Boulevard Bridge
3 runs along here. Highway 280, Eugene Duran Bridge here
4 running north. Down here is the Crystal Springs Pump
5 Station, owned and operated by the PUC. This is
6 Crystal Springs Road. This is the parking area for the
7 dam at the north abutment. And right here is the trail
8 head for Sawyer Camp, which will remain open during
9 this project.

10 There are five construction components and one
11 operational component for the proposed project. We
12 plan to raise the parapet wall, widen the spillway, and
13 increase the size of the stilling basin. All of these
14 are to address the hydraulic deficiencies identified by
15 the DSOD. We are also going to improve drainage on the
16 top of the dam, and we are going to raise the elevation
17 of Sampling Station 5.

18 Sampling Station No. 5 is really a small water
19 quality sampling unit. It's really a minor component
20 of the project, again. The station really needs to be
21 raised in order to accommodate the restored reservoir
22 levels. Future operations will raise the current
23 restricted operating levels to their historic maximum.

24 This next slide is a 3D computer-aided drafted
25 rendering of the dam as it exists now.

1 This is the north abutment, the south
2 abutment, Lower Crystal Springs Reservoir. Downstream
3 here, San Mateo Creek. And this thin strip here is the
4 existing parapet wall -- and the spillway here, about
5 88 feet. This is where the parapet wall guides the
6 flow over the dam and into the stilling basin below.

7 This is the same rendering with the
8 improvements. And the improvements are shown in
9 yellow. We plan to raise the parapet wall by 9 feet.
10 We plan to widen the spillway from 88 feet to 208 feet,
11 and also to permanently raise it by 8 feet. The
12 stilling basin will be increased significantly by about
13 tenfold. And again, all of this is to address the
14 hydraulic deficiency of the dam.

15 I want to point out and make sure that
16 everybody understands, even though we are designing for
17 PMF, it is exceedingly unlikely that this region will
18 ever see anything close to a PMF event. This is
19 strictly a required design capacity for DSOD.

20 We're also going to improve drainage on the
21 top of the dam. You can't see it here, but the way the
22 dam was constructed, there are recesses on the top or
23 the crest that tend to collect water, which makes it
24 very difficult for both the PUC and San Mateo County to
25 do maintenance on top of the dam and their bridge. So

1 we intend to fill those areas, those depressions, with
2 crushed rock or crushed concrete and channel the
3 drainage of that to the face of the dam downstream.

4 This next slide shows the Upper Crystal
5 Springs Reservoir at the south end. It's near Pulgas
6 Temple. You can also see Sampling Station No. 5.
7 After the project is completed, normal operations will
8 restore approximately four feet of the reservoir
9 storage operation. With an additional four feet
10 available during the large storm events, this is
11 equivalent to the eight feet of lost storage under the
12 DSOD restrictions.

13 And I'd like to call your attention to this
14 blue line here, which is the current maximum operating
15 level of the reservoir. The red line indicates the
16 proposed future restored operating level of the
17 reservoir. And you can see that Sampling Station No. 5
18 is kind of smack in the middle, so we definitely have
19 to raise it.

20 The project will restore the four feet of
21 normal operating storage elevation over a three-year
22 period once construction is completed. And this is in
23 order to minimize the biological impacts.

24 Construction is scheduled to take place
25 between early 2011 and the spring of 2012. We hope to

1 achieve substantial completion of the work in late
2 2011, hopefully by mid November.

3 The construction schedule was developed to
4 ensure that the structural integrity of the dam is
5 maintained during construction and into the rainy
6 season. As such, construction must be substantially
7 completed within the dry season in order to maintain
8 the dam's structural integrity by ensuring the
9 improvements are in place and functioning when the wet
10 season arrives.

11 Because of the nature of the work, the
12 schedule for construction is very tight. Add to that
13 the fact that we cannot begin construction of the
14 stilling basin until mid April because of seasonal
15 environmental constraints -- and, again, we need to be
16 substantially complete with the work with the facility
17 functioning by the start of the rainy season, which is
18 typically mid October.

19 Therefore, in order to successfully complete
20 the construction in the dry season, the project
21 requires multiple-shift, 24-hour construction at the
22 Lower Crystal Springs Dam. We intend to pursue that in
23 three shifts, as shown here: a day shift from 6:00 a.m.
24 to 2:00 p.m., Monday through Friday and possibly
25 weekends for up to nine months; a swing shift of

1 2:00 p.m. to 10:00 p.m., Monday through Friday and
2 possibly weekends for up to six months; and a night
3 shift of 10:00 p.m. to 6:00 a.m., Monday through Friday
4 and possibly weekends for up to six months. Work at
5 the sampling station really only requires one shift.
6 And that will occur 7:00 a.m. to 5:00 p.m., Monday
7 through Friday.

8 Thank you. And now I'll turn it back over to
9 Erika.

10 ERIKA LOVEJOY: Thanks, Tasso.

11 Now I'd like to open up the public comment
12 period of this hearing. Please remember that we're
13 here tonight to receive comments on the environmental
14 analysis related to the Draft Environmental Impact
15 Report. For those of you who would like to speak
16 tonight, if you haven't already filled out a speaker
17 card, please do so now and give it to Kelly White.

18 So this is an opportunity for you to comment
19 on the Draft Environmental Impact Report for this
20 project. The public comment portion of this hearing is
21 not a question-and-answer session. This is a hearing
22 to receive your comments on the adequacy and accuracy
23 of the Draft Environmental Impact Report.

24 Your comments will be recorded and will be
25 reviewed along with all written comments received by

1 5:00 p.m. on April 16th, 2010. And comments will be
2 responded to in a comments and responses document that
3 will be included in the final version of this
4 environmental impact report.

5 Also, this is not a hearing to consider
6 approval or disapproval of the proposed project. That
7 hearing will be held by the San Francisco Public
8 Utilities Commission following a final environmental
9 impact report certification hearing which will be held
10 by the San Francisco Planning Department -- excuse
11 me -- at the Planning Commission offices. It will be
12 the Planning Commission.

13 Now we're ready to open up the hearing for
14 public comment, but I'd like to bring up a few ground
15 rules that we'd like for you to follow for the session.
16 When you're ready to speak, please step up to the
17 microphone. It will be here. And state your name and
18 address clearly and slowly. And in the interest of
19 time, please keep your comments limited to a summary of
20 your key principal points of view, and if you wish, you
21 may supplement your comments with additional written
22 comments.

23 So for tonight, we are going to have a comment
24 period that's going to be five minutes. We typically
25 allow three minutes, but given the number of speakers,

1 I think we can allow five minutes tonight. And I'll be
2 signaling you, with the help of Allison Chan, when you
3 are at four minutes, four minutes and 30 seconds. And
4 when your time is up, I'd like for you to conclude.

5 JOSH COOPERMAN: Quick question. Given the fact
6 there's very few people here, my suggestion is that you
7 allow comments not limited by five minutes. Some of us
8 would like -- you have a 3,000-page report, and I do
9 believe that this warrants a good bit more than five
10 minutes.

11 This is not a formal public hearing -- may I
12 finish?

13 There is no formal agenda that says it has to
14 be five minutes.

15 ERIKA LOVEJOY: Can you hold on for a second? I'd
16 like to confer with -- typically in these hearings,
17 it's limited to three minutes. Just --

18 JOSH COOPERMAN: You have discretion as the Chair.

19 ERIKA LOVEJOY: I do understand that.

20 JOSH COOPERMAN: And we -- I'm requesting as a
21 resident of Hillsborough affected by this report that
22 that discretion be provided.

23 ERIKA LOVEJOY: Okay. Then I think we can allow
24 seven minutes. We'll allow seven minutes. And in the
25 interest of the group, if you could -- if you would

1 like to submit additional comments in writing --

2 JOSH COOPERMAN: I already have. They weren't
3 incorporated.

4 ERIKA LOVEJOY: We will respond to your comments
5 in the comments and responses session. Okay -- in the
6 comments and responses document is what I'm trying to
7 say.

O_CASportFish1

8 Okay. Richard Izmirian.

9 RICHARD IZMIRIAN: Thank you. Good evening. My
10 name is Richard Izmirian. I live at 2215 Eden Avenue,
11 San Carlos. I am here tonight to represent not only
12 myself but the California Sport Fishing Protection
13 Alliance, a public trust advocate for wild California
14 fisheries and the habitat that supports them. I serve
15 on the board of directors of the California Sport
16 Fishing Protection Alliance.

17 I grew up around and sometimes in San Mateo
18 Creek. It was a wonderful place of discovery for a
19 kid. It wasn't until I was an adult, however, that I
20 realized that the legendary giant trout that were said
21 to have washed over the Crystal Springs Dam were really
22 steelhead that migrated up San Mateo Creek from the
23 ocean and they spawned.

24 Historical accounts speak of major steelhead
25 runs up San Mateo Creek and into the watershed that is

B19
O_CASportFish1-01

1 now behind Crystal Springs Dam.

2 The Draft Environmental Impact Report on the
3 Crystal Springs Dam Improvement Project acknowledges
4 that some steelhead continue to find their way up San
5 Mateo Creek to spawn. That's good. The document also
6 acknowledges their status under the Endangered Species
7 Act as threatened. That's also correct and good.

8 The document indicates that scoping comments
9 were submitted concerning evaluation of instream flows
10 below the dam for steelhead protection. These scoping
11 comments cited both the Endangered Species Act and 5937
12 of the California Fish and Game Code. This section of
13 the Fish and Game Code requires that enough water be
14 allowed to flow past the dam to keep fish in good
15 condition downstream of the dam.

16 Now, in spite of the scoping comments on
17 flows, the document ignores the issue of 5937 of the
18 Fish and Game Code. The Endangered Species Act issue
19 is answered by a statement that the existing seepage is
20 the baseline condition, that flows will continue to be
21 blocked, and therefore no impact exists.

22 We suggest you reevaluate what it means to
23 comply with the Endangered Species Act and fully
24 cooperate with the Section 7 consultation between the
25 Army Corps of Engineers and the National Marine

B19
O_CASportFish1-0
cont.

1 Fisheries Service. It must be determined what flows
2 below Crystal Springs Dam are required to maintain the
3 threatened Central California Coast steelhead in San
4 Mateo Creek.

5 The San Francisco Public Utilities Commission
6 has never been granted an exemption from either 5937 of
7 the Fish and Game Code or from the Federal Endangered
8 Species Act. The document should acknowledge these
9 requirements and contain a full evaluation of the
10 environmental needs of San Mateo Creek below Crystal
11 Springs Dam. The evaluation must include determination
12 of optimal flows for migration, spawning, and rearing
13 of threatened Central California Coast steelhead.
14 Study parameters must include temperature, dissolved
15 oxygen, geomorphology, food supply, substrate
16 composition, pool-riffle ratio, and riparian
17 conditions.

18 Thank you for the opportunity to comment.

19 ERIKA LOVEJOY: Thank you for your comments.

20 Next, we have Josh Cooperman.

21 JOSH COOPERMAN: I'll go last.

22 ERIKA LOVEJOY: Fan Moberg.

I_Moberg

23 FAN MOBERG: Thank you. I'm Fan Moberg. I live
24 at 760 El Cerrito. I have lived in that house for 34
25 years. My family has grown up there. The creek is

B19
O_CASportFish1-01
cont.

1 right across the street from me.

2 I've seen the San Mateo Creek rise and fall
3 over the years. When we've had severe rainy weather
4 seasons, my husband and friends have gone up to the top
5 of the dam and have watched water coming over the top.
6 At that point, we had to release more water because of
7 the danger of the dam collapsing.

8 It was about two years ago we came to this
9 room and listened to a program on dams and dam safety.
10 This dam was built in 1890. It's 120 years old. It's
11 made out of concrete. Concrete fatigues.

12 At this meeting, they discussed the
13 possibility of rebuilding this dam for the safety of
14 San Mateo, Hillsborough, Burlingame. One of the
15 reasons Mills Hospital was not built in the original
16 state is because it is in the path of the flood if this
17 dam collapses.

18 My children went to South School, and they had
19 dam safety drills all the time to be sure to get the
20 children to high ground.

21 I am not sure that I would feel comfortable
22 with this type of approach to bringing in -- making the
23 dam higher. I don't understand this whole thing
24 scientifically. But to bring the dam higher, making
25 more water up against this old, old dam doesn't make a

H7
I_Moberg-01

G4
I_Moberg-02

G4, GS2
I_Moberg-03

1 whole lot of sense to me. If that dam goes, my
2 house -- I'm right in the middle of it.

3 So I want to be sure that a lot of research
4 has been done and this isn't just a -- kind of a cheap
5 fix for some kind of idea that we need more water
6 because I think we need to really consider the safety
7 of this community.

8 And I think attention needs to be directed
9 into the study of what happens to cement when it's 120
10 years old. I believe it's put together in cement
11 blocks that interlock. It's supposed to be
12 state-of-the art for 120 years ago. We live in a
13 totally different world now.

14 I just think this really should be looked at
15 and not -- I don't know we should be thinking about
16 making it higher so it can have more water behind it
17 and support a much greater weight. I mean, what are we
18 doing?

19 Thank you.

20 ERIKA LOVEJOY: Thank you very much for your
21 comments.

22 I think the name here says "Stephen Pace."

23 STEPHEN PACE: My question --

24 ERIKA LOVEJOY: Sir, are you able to -- thank you.

25 STEPHEN PACE: The question could be really --

1 ERIKA LOVEJOY: Mr. Pace, can you state your name
2 into the microphone for the record.

I_Pace2

3 STEPHEN PACE: My name is Stephen Pace. I'm
4 former project manager with Bechtel Corporation
5 Engineers and Constructors in San Francisco.

6 I attended the initial meeting relevant to
7 this project. And today I heard the drainage of the
8 dam top because of the design features, that it will be
9 filled in. The question I have relates to why were
10 those cavities or voids left in the initial design?
11 Because the engineer obviously was an excellent
12 engineer for the dam to have survived the quakes that
13 it did. And that's why I say it's really not so much
14 of an environmental question as an engineering question
15 that I would appreciate knowing.

PD5
I_Pace2-01

16 ERIKA LOVEJOY: Thank you very much for your
17 comments. They will be responded to in the comments
18 and responses document.

I_Cooperman1

19 Mr. Josh Cooperman?

20 JOSH COOPERMAN: Yes. Good evening. My name is
21 Josh Cooperman. I live at 15 Creekwood Way. I live
22 about 200 feet from San Mateo Creek near Crystal
23 Springs School and, therefore, in the event of a
24 problem with the dam, would be subject to a great
25 impact of water.

MR-G
I_Cooperman1-01

1 I've been for the last -- since the initial
2 scoping meeting. Also, I have a residence in San
3 Francisco for which I pay water bills to San Francisco
4 PUC. So I have standing both as a resident of San
5 Francisco and subject to Hetch Hetchy water
6 restrictions there as well as an indirect beneficiary
7 of Hetch Hetchy through the Hillsborough Water
8 Department, which is a member of BAWSCA.

9 I am also a financial advisor to the Town of
10 Hillsborough and the school district and intimately
11 aware of the economic impacts to the town in the event
12 of catastrophe of this dam.

13 Since the first scoping meeting that occurred
14 at South School four or five years ago, I have been
15 questioning the staff of the PUC about the integrity,
16 structural integrity, of the dam. And initially I
17 requested that at the scoping meeting. I also wrote a
18 card that was not in your report.

19 So I believe your report is deficient, at
20 least the draft that I saw at the San Mateo Library, in
21 including all of the comments provided by people since
22 the first scoping meetings at South School going
23 forward.

24 I also provided a comment at the Pipeline EIR.

25 ERIKA LOVEJOY: Okay --

INT2
I_Cooperman1-02

1 (Reporter interruption)

2 JOSH COOPERMAN: I also provided written and oral
3 comments at the Pipeline EIR which occurred at the golf
4 course at 92 Hayne Road.

5 I also attended a BAWSCA meeting subsequently,
6 about a year ago, and cited my concerns. At the time,
7 staff of the PUC was in attendance at that BAWSCA
8 meeting. And at that meeting, I mentioned some of my
9 concerns having to do with operating procedures of the
10 San Francisco PUC whereby the PUC does risk and cost
11 benefit analyses. And in at least one case, when we
12 had the creek overflowing because of water discharges,
13 San Francisco -- there were memos in the file saying
14 that the PUC determined that it wouldn't go the extra
15 step, and it was a -- they would just wait for
16 litigation, which did occur.

17 And that litigation, the settlement was
18 sealed, including the memos which were the subject of
19 that litigation. And one of the requests tonight is
20 that the PUC unseal those memos so residents of this
21 town would understand some of the internal
22 decision-making tenets of the PUC. And we would want
23 some kind of understanding that those type of
24 procedures, internal operating procedures, would apply
25 in this case.

INT2
I_Cooperman1-02
cont.

G9
I_Cooperman1-03

1 I indicated at that point in time to specific
2 people of the PUC my concerns. All I received was a
3 three- or four-page letter from someone in your staff
4 highlighting an internal engineer's review without any
5 independent -- mention of any independent formal report
6 of outside engineering firms provided to the PUC and
7 the further statement in that letter that you, the PUC,
8 had absolutely no interest in pursuing this further.
9 As far as you were concerned, it was a closed issue.

10 I will like to note Peter Yanev, who is a
11 structural engineer in the Bay Area, his article in the
12 New York times of March 28th, I'd like to formally note
13 that for this record, on Page 11 of the opinion
14 section, whereby he states that, at least in the case
15 of Seattle, we could be subject to a 9.0 earthquake and
16 that we have to be prepared for it.

17 This dam is on the San Andreas Fault. You are
18 increasing the water. And you are increasing the
19 levels of water.

20 In addition, at the time of the BAWSCA
21 hearing, I was given the name of a -- by your staff of
22 someone at the Division of Dam Safety who I contacted.
23 And unfortunately, there -- they weren't very
24 reassuring.

25 First of all, the most recent file reviews of

G1
I_Cooperman1-04

GS1, GS2
I_Cooperman1-05

G2
I_Cooperman1-06

G1
I_Cooperman1-07

1 this dam were only file reviews. No independent new
2 data was provided -- very limited reviews. The dam did
3 pass their review. There has been, according to them,
4 no thorough independent inspection of the dam -- core
5 samples, things like that -- since the early or mid
6 1970s. That's 40 years ago, when the federal
7 government did a -- according to them. I'm not an
8 expert. This is hearsay, basically, taking it from
9 what they told me -- did a nationwide survey of dams.

10 While they couldn't formally recommend any
11 independent survey because they're State officials and
12 that's not their jurisdiction, they didn't see any harm
13 in getting a third party opinion -- kind of like what
14 happens when you go to a doctor.

15 And I would like to have in any third party
16 opinion that you receive -- and I understand you've
17 hired engineers for the PUC -- that all of those
18 reports be made public and not be made subject to
19 confidentiality.

20 Again, I reiterate for the record that there
21 should be an independent review by an independent
22 engineering firm, independent of the San Francisco PUC,
23 so the residents here, including myself, will have
24 information. And if the dam passes, that's fantastic.
25 I'd love to hear that.

G1
I_Cooperman1-07
cont.

1 The consequences if it doesn't are incredibly
2 catastrophic. First of all, my area gets totally wiped
3 out. Mills Hospital has major damage. South School
4 gets wiped out. All the kids there -- there's
5 something like 225, 250 kids there. There are no
6 warning sirens, which was a request on the Casitas Dam
7 in Ventura County, which was a recommendation that was
8 adopted when the dam was reconstructed there. And I
9 suggest that be done here.

10 ERIKA LOVEJOY: Mr. Cooperman --

11 THE WITNESS: I'm going to finish up because it's
12 clear to me that you guys are stonewalling a lot of
13 people in this community.

14 In addition, downtown Burlingame possibly and
15 most probably downtown San Mateo will be wiped out.
16 Furthermore, you're spending 3- to \$4 billion on a
17 system to make sure there's water available to sell.
18 That's your inventory. As a public agency, you are a
19 special fund, an enterprise fund, run like a business.
20 That's your inventory. I suggest that, when you make
21 improvements to your buildings where you house your
22 inventory, you make sure that those buildings or those
23 systems will be in place.

24 A second opinion, which isn't going to cost
25 that much or take that much time, wouldn't be a problem

G4
I_Cooperman1-08

1 in this case.

2 Should the dam break, you will not have water
3 to sell. Your bonds, which are backed by the PUC only,
4 not the general credit of San Francisco, will go into
5 default possibly. The Hillsborough bonds, which they
6 are 42 million, will definitely go into default because
7 we won't have water to sell because we have three days
8 of water storage, and there won't be enough water after
9 that to satisfy -- we need to borrow as it is -- as
10 well as to pay off the bond holders who are looking for
11 repayment. So I dare say that the consequences are
12 catastrophic.

13 Now, this is not the first time I've mentioned
14 all this. This has been mentioned before. I am not a
15 crazy person. I do financial analysis for governments.
16 I have multiple -- I have several advanced degrees.
17 And I strongly suggest that you at least listen to some
18 of the people in this community who are actually trying
19 to help you make sure this is a safe structure.

20 And if it's a safe structure, you have in your
21 file -- in case something happens, you've done the
22 extra step.

23 Thank you.

24 ERIKA LOVEJOY: Thank you very much. I think
25 that's it for the folks who are submitting written

G4
I_Cooperman1-08
cont.

1 comments -- excuse me -- verbal comments.

2 Thank you, everyone, for your comments. So if
3 you'd like to submit written comments, they're due on
4 April 16th at 5:00 p.m. to the San Francisco Planning
5 Department offices.

6 You can also submit additional comments if
7 you'd like. We have another public hearing at the San
8 Francisco Planning Commission on April 8th. You can
9 send them by mail to the San Francisco Planning
10 Department, attention Bill Wycko, who is our
11 environmental review officer. You can also send by
12 e-mail to me at erika.lovejoy@sfgov.org or fax at
13 415/558-6409.

14 If you'd like to take a look at a copy of our
15 Draft EIR, you can find it online at the Planning
16 Department's Web site, at mea.sfplanning.org. We also
17 have a hard copy for view at the San Francisco Planning
18 Department. There's also one at the San Francisco Main
19 Library as well as the San Mateo Main Library.

20 Here's just a summary again of our
21 environmental review schedule. Our 45-day public
22 review ends on April 16th, 2010 at 5:00 p.m. Again, we
23 have this additional public hearing with the Planning
24 Department.

25 Our comments and responses document should be

1 out this summer in 2010, addressing the comments that
2 you've expressed tonight and any in writing. And we
3 expect the EIR to be certified -- or the certification
4 hearing in the fall of 2010.

5 If you have any more questions, if you would
6 like to talk about the environmental review process or
7 the Draft Environmental Impact Report, you can contact
8 me, Erika Lovejoy, in the Planning Department at
9 415/575-9026, or you can e-mail me at
10 erika.lovejoy@sfgov.org.

11 If you want to talk about the proposed
12 project, you can contact Nicole Ziman of the Public
13 Utilities Commission at 415/551-4553 or e-mail her at
14 nziman@sfgwater.org.

15 Thank you again for attending tonight's
16 hearing. If you would like to talk to anybody else
17 after the hearing, remember, those comments you make or
18 questions you have will not be a part of the official
19 record. Please attend the next hearing or submit
20 additional comments in writing. And thank you, again,
21 for your time.

22 (Whereupon, the proceedings concluded
23 at 7:18 o'clock p.m.)
24
25

1 STATE OF CALIFORNIA)
2) ss.
3 COUNTY OF MARIN)

4 I, DEBORAH FUQUA, a Certified Shorthand
5 Reporter of the State of California, duly authorized to
6 administer oaths pursuant to Section 8211 of the
7 California Code of Civil Procedure, do hereby certify
8 that the foregoing proceedings were reported by me, a
9 disinterested person, and thereafter transcribed under
10 my direction into typewriting and is a true and correct
11 transcription of said proceedings.

12 I further certify that I am not of counsel or
13 attorney for either or any of the parties in the
14 foregoing proceeding and caption named, nor in any way
15 interested in the outcome of the cause named in said
16 caption.

17 Dated the 14th day of April, 2010.

18
19 DEBORAH FUQUA
20 CSR NO. 12948
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1 BEFORE THE SAN FRANCISCO PLANNING COMMISSION

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4 SAN FRANCISCO PLANNING DEPARTMENT
5 SAN FRANCISCO PUBLIC UTILITIES COMMISSION
6 LOWER CRYSTAL SPRINGS DAM
7 IMPROVEMENT PROJECT
8 PUBLIC HEARING ON THE
9 DRAFT ENVIRONMENTAL IMPACT REPORT
10

11 April 8, 2010

12 Item No. 13, Case No. 2006.0536E

13 Commission Chambers - Room 400

14 City Hall, 1 Dr. Carlton B. Goodlett Place

15 San Francisco, California
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25 REPORTED BY: DEBORAH FUQUA, CSR #12948

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2 A P P E A R A N C E S
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4 San Francisco Planning Commission:

5 President Ron Miguel

6 Vice President Christina Olague

7 Secretary Linda Avery

8 Commissioners:
9

10 Gwyneth Borden

11 William L. Lee

12 Kathrin Moore

13 Hisashi Sugaya

14 Michael Antonini
15

16 PRESENTATION:

17 San Francisco Planning Department:

18 Erika Lovejoy, Senior Environmental Planner,
19 Major Environmental Analysis Division
20

21 San Francisco Public Utilities Commission:

22 Tasso Mavroudis, Project Manager
23

24 ESA + Orion Venture, Consultant:

25 Joyce Hsiao, Project Manager

1 Thursday, April 8, 2010

8:39 o'clock p.m.

2 SECRETARY AVERY: Commissioners, you're on Item
3 13, Case No. 2006.0536E, the Lower Crystal Springs Dam
4 Improvement Project. This is informational
5 presentation and public hearing on the Draft
6 Environmental Impact Report.

7 ERIKA LOVEJOY: Good evening, Commissioners. I'm
8 Erika Lovejoy with the Planning Department, Major
9 Environmental Analysis Division. This is a hearing to
10 receive comments on the Draft Environmental Impact
11 Report for Case No. 2006.0536E, the Lower Crystal
12 Springs Dam Improvement Project.

13 Staff is not here to respond to comments
14 today. Comments will be transcribed and responded to
15 in writing in a comments and responses document, which
16 will respond to all verbal and written comments
17 received to make revisions to the Draft EIR as
18 appropriate.

19 This is not a hearing to consider approval or
20 disapproval of the project. That hearing will follow
21 the Final EIR certification. Comments today should be
22 directed to the adequacy and accuracy of the
23 information contained the Draft EIR. Commenters should
24 speak slowly and clearly so that the court reporter can
25 produce an accurate transcript. Also, commenters

1 should say their name and address so that they can be
2 properly identified so that they can be sent a copy of
3 the comments and responses to this document when it is
4 completed. After comment from the general public, we
5 will also take any comments on the Draft EIR by the
6 Planning Commission.

7 The public comment for this project began
8 March 2nd, 2010, and comments will be received by the
9 Planning Department until 5:00 p.m. on April 16th,
10 2010.

11 In addition to today's hearing, we had a
12 hearing in Hillsborough this past Tuesday, and we also
13 had a hearing yesterday before the Historic
14 Preservation Commission.

15 This concludes staff's presentation, but
16 before opening the public hearing on this item, the San
17 Francisco Public Utilities Commission's project
18 manager, Tasso Mavroudis, would like to make a brief
19 presentation to the Commission on the proposed project.

20 TASSO MAVROUDIS: Thank you, Erika.

21 Good evening, President Miguel and
22 Commissioners. Tasso Mavroudis, Project Manager for
23 the Lower Crystal Springs Dam Improvement.

24 Lower Crystal Springs Dam resides in the
25 Crystal Springs watershed owned and maintain by the San

1 Francisco PUC. It's located in unincorporated San
2 Mateo County, about 12 miles south of San Francisco and
3 3 miles west of the City of San Mateo. Construction of
4 the dam was completed in 1890. It is a 140-foot-high
5 mass concrete dam with a span of 600 feet between the
6 abutments. And it's interesting to note that, being
7 situated within a thousand feet of the San Andreas
8 Fault, the dam survived the 1906 earthquake and every
9 earthquake since, including the recent Loma Prieta,
10 without any damage.

11 I'd like to call your attention to the Skyline
12 Boulevard Bridge here. This is own and operated by the
13 County of San Mateo. San Mateo will be replacing that
14 bridge, and they are doing that in coordination with
15 the PUC's proposed project.

16 The Lower Crystal Springs Dam facility is part
17 of the water supply system for San Francisco and the
18 Peninsula, and it's a key component of the Crystal
19 Springs-San Andreas Transmission System. We came and
20 saw you about that a little while ago.

21 The proposed project is a hydraulic upgrade of
22 the dam facility required to address deficiencies
23 identified by the California Department of Water
24 Resources Division of Safety of Dams, "DSOD" for short.
25 Because of the hydraulic deficiencies, the DSOD imposed

1 restrictions to reservoir operating levels and mandated
2 upgrades to dam.

3 There are seven objectives listed in the EIR,
4 and they're shown here. Two key objectives that
5 encompass these are complying with the DSOD directive
6 by hydraulically upgrading the dam and meeting Water
7 System Improvement Program levels of service goals.

8 With respect to the hydraulic upgrade of the
9 dam, in 1983, the DSOD determined that Lower Crystal
10 Springs Dam could not safely pass what is termed the
11 probable maximum flood, which is DSOD's required spill
12 capacity for the dam.

13 Now, probable maximum flood is a technical
14 term that denotes the worst case theoretical flood
15 event in a particular drainage area. DSOD's analysis
16 concluded that the current spillway and the stilling
17 basin are undersized and are in need of upgrade. And
18 until these upgrades are implemented, DSOD mandated
19 operating levels be restricted, which required lowering
20 the maximum water level for the Crystal Springs
21 reservoirs by eight feet. And this resulted in a 16
22 percent loss of capacity, translates to about 2.6
23 billion gallons.

24 Meeting program levels of service goals for
25 Crystal Springs Dam Improvements pertains to improving

1 the San Francisco PUC's water supply and delivery
2 capability and delivery reliability. This is a
3 close-up of the Crystal Springs watershed. You're
4 looking at San Mateo here, Hillsborough here. This is
5 Highway 280, Highway 92. This is Lower Crystal Springs
6 Reservoir, Upper Crystal Springs Reservoir.

7 The two highlighted areas denote where
8 construction work will occur as part of this project,
9 the lion's share of which will occur at Lower Crystal
10 Springs. The project area -- excuse me. There's a
11 very small component of the project, Sampling
12 Station 5, down near the Pulgas Temple.

13 The project also encompasses the reservoirs,
14 and this is because of the -- due to the restoration of
15 the historic storage levels. There are five
16 construction components and one operating component for
17 the proposed project. We intend to raise the parapet
18 wall, widen the spillway, and construct a larger
19 stilling basin. All of this is to address the
20 hydraulic conditions of the dam.

21 We also intend to improve drainage on top of
22 the dam, and we intend to raise the elevation of
23 Sampling Station No. 5. Sampling Station No. 5 is an
24 existing small water-quality-sampling unit. It's
25 really a minor part of the project. The station needs

1 to be raised to accommodate the restored reservoir
2 levels. Future operations will raise the current
3 restricted operating levels of the reservoir.

4 This next slide is a 3D computer-aided drafted
5 rendering of the existing dam, north abutment, south
6 abutment. This is Crystal Springs Reservoir and San
7 Mateo Creek. This little thin line here is the
8 existing parapet wall, the spillway. The parapet wall
9 helps guide flow through the spillway and down to the
10 stilling basin here, down in the creek.

11 This next slide is the proposed improvements.
12 They're shown in yellow here. We plan to raise or
13 increase the height of the parapet wall by 9 feet. We
14 intend to widen the spillway from 88 feet to 208 feet
15 and permanently raise it by 8 feet. And we need to
16 increase the size of the stilling basin significantly,
17 on the order of ten times.

18 Again, all of this is to address the hydraulic
19 deficiency of the dam. I would like to note, however,
20 that even though we are designing these upgrades for
21 probable maximum flood, it is exceedingly unlikely that
22 the region level in the dam would ever experience
23 anything close to a probable maximum flood rate. This
24 is simply a requirement criteria of the Division of
25 Safety of Dams.

1 I mentioned earlier that we are going to
2 improve drainage on the top of this dam. What you
3 can't see in this rendering is that the way this dam
4 was built left depressions on top of the dam. Water
5 tends to collect there and pool. It's made it very
6 difficulty to conduct maintenance for both the PUC and
7 San Mateo County. We intend to fill in those
8 depressions with crushed rock, gravel and then channel
9 the drainage to the basin, downstream.

10 This next slide gives you a close-up of the
11 Upper Crystal Springs Reservoir, south end, near the
12 Pulgas Water Temple. You can see Sampling Station 5 is
13 here.

14 After the project is completed, normal
15 operations will restore about four feet of the
16 reservoir storage elevation, an additional four feet
17 available during large storm events. This is
18 equivalent to the eight feet that was lost under the
19 DSOD restriction.

20 And I would call your attention to the dark
21 blue line. That represents the current restricted
22 maximum operating level. The red line represents the
23 proposed future restored maximum operating level of the
24 reservoir. And you can see that Sampling Station 5 is
25 smack right in the middle of that, hence, we have to

1 raise it.

2 The project will restore four feet of normal
3 operations over a three-year period once construction
4 is completed. And this is to minimize biological
5 impacts. Construction is scheduled to take place from
6 early 2011 until spring 2012. Substantial completion
7 for the work is expected by late 2011, we're hoping by
8 mid November.

9 The construction schedule was developed to
10 ensure that the structural integrity of the dam is
11 maintained during construction especially into the
12 rainy season. As such, construction must be
13 substantially completed within the dry season in order
14 to maintain the dam's structural integrity by ensuring
15 the improvements are in place and functioning when the
16 wet season arrives.

17 Because of the nature of the work, the
18 schedule for construction is exceedingly tight.
19 Furthermore, we cannot start construction of the
20 stilling basin in the creek until mid April due to
21 seasonal environmental restrictions. We must be
22 finished or substantially complete with construction
23 before the rainy season hits, which typically is mid
24 October. Therefore, in order to successfully complete
25 construction in the dry season, the project requires

1 multiple-shift construction for the Lower Crystal
2 Springs Dam.

3 And we intend to have three shifts, the day
4 shift, 6:00 a.m. to 2:00 p.m., Monday through Friday
5 and possibly weekends for up to nine months. The swing
6 shift would be 2:00 p.m. to 10:00 p.m., Monday through
7 Friday and possibly weekends for up to six months.
8 Night shift, 10:00 p.m. to 6:00 a.m., Monday through
9 Friday and possibly weekends for up to six months.

10 Work at the sampling station really requires
11 only one shift, and that would be from 7:00 a.m. to
12 5:00 p.m.

13 And that completes my presentation.

14 COMMISSIONER MIGUEL: Thank you.

15 ERIKA LOVEJOY: Erika Lovejoy. So that concludes
16 our presentations for tonight, so if you don't -- if
17 you have any questions, we're available to answer them.
18 Otherwise, staff recommends opening the public hearing
19 for comment.

20 PRESIDENT MIGUEL: Thank you.

21 Is there any public comment on this item?

22 (No response)

23 PRESIDENT MIGUEL: Hearing none, public comment is
24 closed.

25 Commissioner Moore?

1 COMMISSIONER MOORE: I just wanted to comment on
2 the thorough presentation. The question I have is,
3 does the requirement for multiple shifts increase the
4 cost of the project?

G5
A_SFPC1-01
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5 TASSO MAVROUDIS: There was a -- when we did an
6 estimate, put the estimate together, there was a
7 lump-sum figure that we used of a half a million
8 dollars to address the added difficulty in doing the
9 project.

10 COMMISSIONER MOORE: So it's labor-related costs,
11 I gather?

G5
A_SFPC1-01
↑
cont.

12 TASSO MAVROUDIS: Yeah, well, it was basically a
13 lump-sum figure used to address the difficulty, both
14 labor, materials, equipment. I don't have a breakdown
15 with me, Commissioner.

16 COMMISSIONER MOORE: I just wanted to hear your
17 answer, and that's fine.

18 I have a quick question. What do you describe
19 as seasonal difficulties which constrain the time that
20 you can construct? Is it the weather? Is it the
21 spawning of fish or butterflies or whatever?

PD7
A_SFPC1-02
↑

22 TASSO MAVROUDIS: Actually, if I could call up our
23 consultants, they might be able to give you a better
24 idea.

25 COMMISSIONER MOORE: I was just curious.

1 TASSO MAVROUDIS: We have California red-legged
2 frog. We have the federally protected San Francisco
3 garter snake in the area. And I believe it's a
4 requirement for Fish and Wildlife and Fish and Game,
5 but this is Joyce Hsiao of ESA.

6 JOYCE HSIAO: Hi. Joyce Hsiao, ESA + Orion
7 Venture, Consultant.

8 There are two restrictions that are
9 determining the construction schedule. What Tasso
10 said, one is the dry season for construction because.
11 In order to build the improvements to the dam, they
12 need to take apart the whole dam and the old stilling
13 basin. And it's very dangerous to the dam, to have --
14 if it were to rain and not to have it functioning, the
15 stilling basin or the dam, there's a public safety
16 issue with that.

17 The other environmental constraint is for the
18 fish spawning because in San Mateo Creek below the dam,
19 there are some steelhead fish that are in a sensitive
20 life stage so that they cannot work in -- below the dam
21 until after that life stage, which is about April.

22 COMMISSIONER MOORE: Thank you. You've answered
23 some very important questions, and I fully appreciate
24 what you've done.

25 PRESIDENT MIGUEL: Commissioner Antonini?

1 COMMISSIONER ANTONINI: Thank you.

2 I did have a chance to see that dam. You
3 know, 1890, with interlocking large concrete blocks.
4 So I trust the addition will be every bit as sturdy as
5 the original dam. I don't think we've seen the
6 100-year flood yet because it's been 120 years. So it
7 may be coming eventually.

H5
A_SFPC2-01

8 The other question I did have is, it looks
9 like the work down at Upper Crystal Springs will allow
10 our storing capacity to be higher in Upper Crystal
11 Springs because you showed how far the water would move
12 in the highest year, then, after that's completed.

PD8
A_SFPC2-02

13 TASSO MAVROUDIS: Correct, Commissioner. In 1983,
14 as I mentioned, when the deficiency was discovered,
15 Safety of Dams restricted our operating level by eight
16 feet. We're going to get half of that back under
17 normal operating conditions. And during, you know,
18 storm periods, we may be able to get most of it back.
19 During normal operations, we will get half of it back.
20 So, yes, we are going to get some of that 2.6 billion
21 gallons back.

22 We're not increasing the height of the
23 reservoir, taking it any higher than it was originally.

24 COMMISSIONER ANTONINI: Yes, but it will be back
25 to where it could be and give us increased storage

PD8
A_SFPC2-02
cont.

1 capacity --

2 TASSO MAVROUDIS: Yes.

3 COMMISSIONER ANTONINI: -- which is a big issue.

4 So that's good. Okay. Thank you.

A_SFPC3

5 PRESIDENT MIGUEL: Commissioner Sugaya?

6 COMMISSIONER SUGAYA: Yeah. Could you explain a
7 little bit about this hundred-year flood or whatever
8 it's called?

PD1
A_SFPC3-01

9 TASSO MAVROUDIS: Probable maximum flood?

10 COMMISSIONER SUGAYA: Well, how much of the water
11 going into the reservoirs comes through Pulgas, for
12 example, versus how much water, if there's a big rain,
13 comes down off the hillsides and fills the reservoir?
14 Can't you control the level by shutting down the amount
15 that's flowing in?

PD2
A_SFPC3-02

16 TASSO MAVROUDIS: Oh, sure. Certainly 85 percent
17 of what goes into the reservoir comes from up country,
18 from Hetch Hetchy. And 15 percent is from local
19 runoff.

20 COMMISSIONER SUGAYA: Right. So it would have to
21 be a fairly hefty amount of --

22 TASSO MAVROUDIS: Yeah. Probable maximum flood is
23 the worst case, as I mentioned, storm event that could
24 conceivably hit the area. It's beyond a 10,000-year
25 return. We're not talking about a hundred-year return.

1 We're talking about beyond 10,000 years -- Armageddon
2 storm.

3 And the reason why the DSOD requires PMF for
4 this facility is because of it's high hazard nature due
5 to the impacts downstream should it ever fail. And
6 they -- so they want to make sure that, when we do get
7 a hundred-year storm or a five-hundred year storm, that
8 the dam could easily handle it without over topping it.

9 COMMISSIONER SUGAYA: Thank you.

10 ERIKA LOVEJOY: If the Commission doesn't have any
11 more comments, I would recommended we close the
12 hearing.

13 PRESIDENT MIGUEL: Thank you.

14 SECRETARY AVERY: Mr. President, assuming you'll
15 close the public hearing?

16 PRESIDENT MIGUEL: The public hearing is closed.

17 SECRETARY AVERY: We'll remind the public that
18 written comments will be accepted at the Planning
19 Department's offices until the close of business on
20 April 16, 2010.

21 Thank you.

22 (Whereupon, the proceedings concluded
23 at 8:59 o'clock p.m.)
24
25

1 STATE OF CALIFORNIA)
2) ss.
3 COUNTY OF MARIN)

4 I, DEBORAH FUQUA, a Certified Shorthand
5 Reporter of the State of California, duly authorized to
6 administer oaths pursuant to Section 8211 of the
7 California Code of Civil Procedure, do hereby certify
8 that the foregoing proceedings were reported by me, a
9 disinterested person, and thereafter transcribed under
10 my direction into typewriting and is a true and correct
11 transcription of said proceedings.

12 I further certify that I am not of counsel or
13 attorney for either or any of the parties in the
14 foregoing proceeding and caption named, nor in any way
15 interested in the outcome of the cause named in said
16 caption.

17 Dated the 14th day of April, 2010.

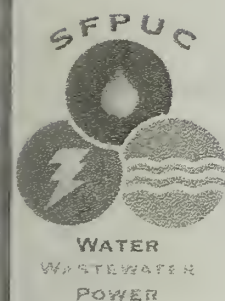
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19 DEBORAH FUQUA

20 CSR NO. 12948
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APPENDIX C&R C

July 16, 2010 Letter to U.S. Army Corps of Engineers – Proposed Minimum Water Release Schedule for Lower San Mateo Creek

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SAN FRANCISCO PUBLIC UTILITIES COMMISSION

OFFICE OF THE ASSISTANT GENERAL MANAGER, WATER
1155 Market Street, 11th Floor, San Francisco, CA 94103 • Tel. (415) 934-5736



July 16, 2010

Ms. Jane Hicks
Regulatory Branch Chief
U.S. Army Corps of Engineers
San Francisco District
1455 Market Street
San Francisco, CA 94103-1398

Subject: Lower Crystal Springs Dam Improvements Project and Crystal Springs-San Andreas System Transmission Upgrade Project, Project Updates, San Mateo County, California; Corps File No. 400143S/30317S

Dear Ms. Hicks:

The San Francisco Public Utilities Commission (SFPUC) is pleased to provide you with the enclosed documents for the Lower Crystal Springs Dam Improvements and Crystal Springs-San Andreas System Transmission Upgrade Projects (LCSD-CSSA): San Mateo Creek Minimum Water Release Schedule (supplements Conservation Measure 11); San Mateo Creek Aquatic Resource Monitoring Plan; and Revised Conservation Measures 8 and 10. Note that this material supplements and/or supersedes related descriptions in the Biological Assessment (December 2009).

Over the past several months, staff from SFPUC, National Marine Fisheries Service (NMFS), and California Department of Fish and Game (CDFG) have been working in close coordination regarding the Section 7 review process for LCSD-CSSA. This coordination has resulted in refinements to the proposed action and to the proposed operation of the facilities after construction is completed. This letter summarizes the most recent Section 7 coordination, updates to the proposed action based on this coordination, and documents the agreement reached by the SFPUC, NMFS, and CDFG on the minimum flow schedules from Lower Crystal Springs Dam to San Mateo Creek.

The SFPUC proposed to develop a minimum water release schedule for *O. mykiss* in San Mateo Creek as part of the LCSD-CSSA Biological Assessment (Conservation Measure 11). The initial proposed instream flow schedule was transmitted to NMFS and CDFG in early June 2010, and based on field work conducted in April and May 2010 during controlled releases made from LCSD. Note that NMFS and CDFG conducted their own field work in this same time frame, and conducted their own assessment. The SFPUC, NMFS, and CDFG met in June 2010 and reached agreement based on both independent efforts on the final minimum flow schedule included in this transmittal.

Ms. Jane Hicks

Lower Crystal Springs Dam Improvements Project and Crystal Springs-San Andreas
System Transmission Upgrade Project, Project Updates, San Mateo County, California;
Corps File No. 400143S/30317S

July 16, 2010

Page 2 of 2

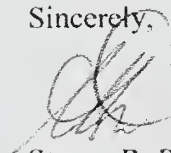
The Biological Assessment submitted to the USACE in December 2009 is updated as follows:

- Conservation Measure 11 is supplemented by the San Mateo Creek Minimum Water Release Schedule and San Mateo Creek Aquatic Resource Monitoring Plan documents.
- Conservation Measures 8 and 10 are superseded by the enclosures.

As we discussed with NMFS over the last few months, these commitments will allow the Section 7 consultation to be completed quickly, and NMFS has agreed to provide a Biological Opinion no later than July 30, 2010.

The SFPUC appreciates your participation and ongoing assistance with LCSD-CSSA. If you have any questions about the technical memorandum, please contact Tim Ramirez at (415) 554-3265.

Sincerely,



Steven R. Ritchie
Assistant General Manager
Water Enterprise

Enclosures: 1. San Mateo Creek Minimum Water Release Schedule (2 files)
2. San Mateo Creek Aquatic Resource Monitoring Plan
3. Revised Conservation Measures 8 and 10

cc: Bob Smith, USACE
Dick Butler, NMFS
Gary Stern, NMFS
Dan Logan, NMFS
Chuck Armor, CDFG
Greg Martinelli, CDFG
Wes Stokes, CDFG
Tim Ramirez, SFPUC
Deborah Craven-Green, SFPUC
Tasso Mavroudis, SFPUC
Anna Roche, SFPUC

San Mateo Creek Minimum Water Release Schedule July 16, 2010

Table 1. Summary of San Mateo Creek minimum water release schedule below Lower Crystal Springs Dam.³

Flow schedule decision date	Flow schedule application period	Dry (Schedule B)			Normal/Wet (Schedule A)		
		Cumulated precipitation index for water-year classification (in) ¹	Flow ramping schedule (cfs)	Flow requirement (cfs)	Cumulated precipitation index for water-year classification (in)	Flow ramping schedule (cfs)	Flow requirement (cfs)
N/A	Oct 1 – Dec 14	N/A	N/A	3	N/A	N/A	3
N/A	Dec 15 – Jan 12	N/A	N/A	5	N/A	N/A	5
Jan. 12 ²	Jan. 15 – Mar 15	≤ 10.3	Jan 13: 5 cfs Jan 14: 7 cfs	10	> 10.3	Jan 13: 7 Jan 14: 12	17
N/A	Mar 16 – Mar 30	N/A	N/A	8	N/A	Mar 16-17: 15 Mar 18-19: 12	10
N/A	Mar 31 – Apr 30	N/A	N/A	5	N/A	Mar 31-Apr 1: 7	5
N/A	May 1 – Sep 30	N/A	N/A	3	N/A	N/A	3

Notes:

¹ San Mateo Creek precipitation index is the average of daily rainfall measured at four SFPUC gages: Davis Tunnel, San Andreas Dam, Lower Crystal Spring Dam and Upper Crystal Springs.

² The decision on Jan 12 is based on cumulated precipitation index to Jan 11.

³ If runoff from watersheds below Lower Crystal Springs Dam is creating unacceptable flooding conditions during precipitation events, the SFPUC may vary from the minimum flow requirements to not exacerbate this flood risk. In these rare situations, varying from this schedule will not result in anything less than the minimum flow conditions in the reach between CSD and the USGS gage on lower San Mateo Creek, which is the compliance location for the minimum flow requirements.

San Mateo Creek Aquatic Resource Monitoring Plan

**San Francisco Public Utilities Commission
Water Enterprise
Natural Resources and Lands Management Division
Fisheries and Wildlife Section**

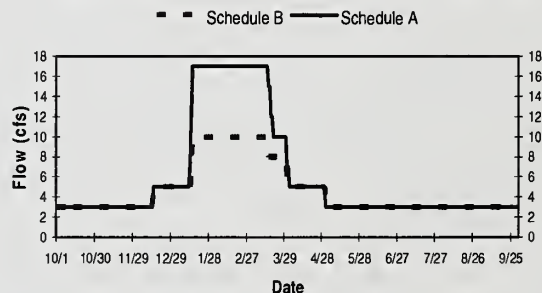
June 2010

As part of the Lower Crystal Springs Dam Improvements Project and the Crystal Springs-San Andreas Transmission Upgrade Project, the San Francisco Public Utilities Commission (SFPUC) worked with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG) to develop a minimum flow schedule for San Mateo Creek downstream of Crystal Springs Dam (Table/Figure 1). During the development of the flow schedule the SFPUC committed to the establishment of a long term aquatic resource monitoring program that will evaluate the effects of the flow schedule on stream conditions, document the utilization of the stream by anadromous fishes, and assess fish community structure and population health.

Table/Figure 1. *Summary of in-stream flow schedules below Crystal Springs Dam.*

Date	Water Year Type	
	Dry (40%) Schedule B	Normal/Wet (60%) Schedule A
Oct.1 to Dec. 14	3	3
Dec. 15 to Jan. 12	5	5
Jan. 15 to Mar. 15	10*	17*
Mar. 16 to Mar. 30	8	10*
Mar. 31 to Apr. 30	5	5*
May 1 to Sep. 30	3	3

* Need to see daily schedule for ramping details.



The annual aquatic resource monitoring program will include the continuation of monitoring that began in 2008 along with the establishment of new monitoring components and will continue for a minimum of 10 years following the onset of water releases. Program elements will consist of annual monitoring of in-stream flows, Crystal Springs Reservoir water quality conditions, San Mateo Creek water quality conditions, salmonid spawning and migratory patterns, food production, and fish community structure and population health.

San Mateo Creek aquatic resource monitoring findings will be analyzed on a water-year basis and reported annually (following the close of each water-year, a draft is due March 31 and final due June 30). Results from the monitoring program will be used to demonstrate compliance with the minimum flow requirements, to evaluate aquatic resource changes in terms of both natural variability and responses to operational changes (water releases), and to determine how closely the flow schedule is meeting NMFS, CDFG, and SFPUC fishery-related goals.

In-Stream Flow

In-stream flows, and the effect they have on habitat quality and quantity, have been identified as potentially limiting for the establishment of viable steelhead populations in lower San Mateo Creek. Consequently, the SFPUC has agreed to release water from Crystal Springs Reservoir to supplement unregulated runoff and accretions from San Mateo Creek below Crystal Springs Dam, meeting specific minimum flow requirements (Table/Figure 1) with United States Geological Survey (USGS) gage 11162753 as the point of compliance. Target flows have been designed to provide water of suitable volume and velocity to support all steelhead life stages.

An initial component of the project is to monitor the flow rates in lower San Mateo Creek to document that minimum flow requirements are met. The information, that will also be used to assess fish community and population responses to the minimum flow schedule, will be downloaded from the USGS website for streamflow data (<http://waterdata.usgs.gov/nwis/uv?11162753>) and presented as daily mean flow in the annual reports.

Reservoir Water Quality

An important factor in reestablishing steelhead trout and maintaining healthy native fish assemblages in San Mateo Creek is the quality of water released from Crystal Springs Reservoir. Sufficiently cold, well-oxygenated water is required by steelhead trout and the biota they depend upon. Other parameters important to trout and native fishes downstream of the release point include pH, turbidity, ammonia, and hydrogen sulfide concentrations. Depth dependent variability of some water quality parameters occurring in stratified reservoirs can affect the quality of release water; and can be significantly different than that of the receiving stream.

Lower Crystal Springs Reservoir elevation readings are taken daily from a staff gage near the adit. Readings are maintained by reservoir managers and reported to state resource agencies. Data are presented in acre-feet in this report. Natural Resources and Lands Management Division biologists monitor Lower Crystal Springs Reservoir water quality conditions approximately twice monthly. Sampling includes measurements taken at ten-foot intervals using a Hydrolab® multi-parameter probe that records *in-situ* water quality conditions including temperature, conductivity, pH, dissolved oxygen (DO), chlorophyll-a, and oxidation-reduction potential. In addition, discrete grab samples are collected at twenty-foot intervals with a Kemmerer bottle for the analysis of turbidity, alkalinity, hardness, calcium, ammonia, nitrate, ortho-phosphate and total phosphorus, chloride, and iron and manganese. Hydrogen sulfide concentrations are measured only when odors indicate its presence. Grab samples from the surface, twenty-, and forty-feet are also analyzed for chlorophyll-a concentration. A plankton sample is collected by towing an 80-micron mesh net vertically through the upper fifty-feet of the water column.

Creek Water Quality

Downstream of Crystal Springs Dam, San Mateo Creek's water temperature regimes appear to be suitable for steelhead trout with no water releases. Warming water temperatures during spring are thought to lead to anadromy and consequently necessary for the establishment of viable steelhead trout populations in San Mateo Creek below Crystal Springs Dam. The San Mateo Creek minimum flow requirement schedule, developed for the restoration of steelhead trout, is designed to provide year-round suitable cold-water habitat and refugia for fish while not eliminating the spring warming trends.

Dissolved oxygen concentrations and pH are not expected to be limiting to steelhead trout or other native species residing in lower San Mateo Creek. Turbidity, however, has been identified as potentially deleterious to steelhead habitat conditions.

Water temperature loggers, housed in a variety of protective cases including PVC and steel pipes, will be deployed in San Mateo Creek both upstream and downstream of Crystal Springs Reservoir. Logger housings will be secured by means of swaging stainless steel cabling to a variety of rebar, stakes, and existing structures. Sensor locations on public lands will be concealed to prevent tampering or vandalism. Air temperature logger will also be deployed downstream and upstream of the reservoir.

Instantaneous dissolved oxygen concentration, pH and turbidity measurements will be taken during spawning survey, smolt trapping and fish community and population surveys. All water quality parameters will be measured prior to other survey activities. Dissolved oxygen and pH will be recorded with a Hydrolab® Surveyor and DataSonde water quality multiprobe unit. Turbidity will be measured with a Hach® 2100P turbidimeter.

Spawning Surveys

Water releases and improved water quality in the upper portion of lower San Mateo Creek are intended to provide conditions suitable for steelhead trout spawning and rearing. Trout spawning activities in San Mateo Creek are expected to increase with an improvement in habitat conditions. This component of the monitoring study is designed to identify the existing steelhead trout spawning activity that occurs in lower San Mateo Creek.

Annual spawning surveys are intended to assess the status and trends of naturally reproducing steelhead trout spawning stocks utilizing lower San Mateo Creek. Survey results will be used to estimate the size of the lower San Mateo Creek spawning population and evaluate the utilization of potential spawning habitat identified during spawning habitat surveys, but are not intended to address the suitability of spawning habitat or the success of spawning fish. Walking spawning surveys covering the entire study reach will be conducted twice per month in January, February, March and April. Surveys will only be conducted when conditions allow for viewing spawning adults and/or redds, with not less than one week between surveys. Spawning surveys are expected to follow established redd count protocols.

The study reach will be surveyed from the downstream end to the upstream end with one biologist on each bank. Surveyors, wearing hats with visors and polarized sunglasses to optimize their ability to view fish and redds, will avoid walking in the creek whenever possible. Recorded observations will include sightings of redds, diggings, adult trout and young-of-year (YOY). Redd sightings will be documented by recording GPS coordinates and marking by hanging red flagging on adjacent vegetation. Flagging will be labeled with date and time, unique redd number, redd dimensions and redd position with respect to the channel. In addition to confirmed redds, the GPS coordinates of suspected test redds and diggings will be recorded. All adult, juvenile and YOY trout observations will be noted and include GPS coordinates, time observed and the type of habitat that the fish were using.

Smolt Trapping

Water releases into lower San Mateo Creek are intended to increase the quantity and quality of suitable steelhead spawning and rearing habitat. Water releases, at the same time, are not meant to impede the smoltification process. An examination of the timing and frequency of movement of out-migrating steelhead trout juveniles, through the use of traps, will be used to assess the ability of juvenile fish to smolt. Smolt trapping will also help to document the success of spawning steelhead, the relative abundances of various juvenile steelhead life stages in the system, the capability of juvenile fish to move downstream, and the triggers that influence downstream movements.

To evaluate movement patterns of juvenile steelhead trout in lower San Mateo Creek, their migrational timing and size class-specific relative abundances will be monitored using a single downstream migrant trap (e.g. fyke trap, rotary screw trap) installed at a secure location at the lower end of the lower San Mateo Creek study reach. When selecting the trap location and installation method care will be taken to not hinder the upstream movement of adult steelhead trout. Trapping will be conducted in March, April and May, continuing through June only if significant numbers of juvenile steelhead trout are being collected in late May. Pit tags may be used to assess migrational success and survival rates.

Macroinvertebrate Production

Food production for rearing steelhead trout, in the form of benthic macroinvertebrates, is a potentially limiting factor in lower San Mateo Creek. Macroinvertebrate production in cold water streams is typically greatest in riffles, when there are sufficient depths and velocities available. The San Mateo Creek minimum flow requirement schedule, developed for the restoration of steelhead trout, is designed to provide adequate depths and velocities within riffle thalwegs so that benthic macroinvertebrate production is increased over current conditions.

Standard quantitative methods developed by the State Water Resources Control Board will be utilized to collect benthic macroinvertebrate samples from representative San Mateo Creek riffle habitats. A targeted-riffle composite and reachwide benthos composite survey, at a minimum of three sites upstream of Crystal Springs Dam and three sites downstream of the dam, will be conducted

annually during spring. Goal-specific metrics (e.g. diversity) will be generated and compared to evaluate the relationships between benthic macroinvertebrate production and habitat conditions.

Fish Community and Population Surveys

Habitat conditions in San Mateo Creek are expected to improve once minimum flow requirements are met, with the distribution and abundance of steelhead trout increasing throughout study reach. The minimum flow schedule should also, however, maintain populations of other native fishes in lower San Mateo Creek. To evaluate the affects of the minimum flow schedule, fish communities and populations in lower San Mateo Creek will be monitored. Additionally, fishes from other parts of the watershed (San Mateo Creek upstream of Crystal Springs Reservoir), where existing conditions are expected to be suitable for resident rainbow trout, should be examined and compared to those areas affected by the releases.

Each steelhead life stage, including YOY, 1+, 2+ and 3+ juveniles, uses specific habitat types to varying degrees. Relatively deep pools along San Mateo Creek, for example, may be important for sustaining populations of older steelhead trout juveniles, while younger fish might rely on the abundance of food typically available in riffle habitat. This component of the monitoring program is designed to evaluate the extent to which individual habitat types in San Mateo Creek, both upstream and downstream of Crystal Springs Reservoir, provide suitable habitat to steelhead trout, resident rainbow trout and other fishes.

Snorkel surveys are a cost-effective means of sampling deeper pools. For the purposes of this study, pools were typically defined as in-stream bodies of water greater or equal to four feet average depth. While some pool locations may not meet these depth criteria during dry water years, they will not be excluded from the monitoring. However, if natural fluvial geomorphic processes significantly alter the habitat, nearby alternate locations may replace sites between years.

Upon arrival at each pool, a team of biologists will visually inspect the area from the bank and discuss how the survey will be conducted. Issues to determine at each site include the number of snorkelers, starting positions, the count direction and path, and the end-point of the survey.

The number of snorkelers required for each survey will be dependent on the width and depth of the pool, such that complete coverage of the pool is ensured. Spacing between snorkelers will always be small enough so that fish counts are accurate, yet large enough so that the ability to swim or count fishes is not impeded. Each snorkel survey will begin at the downstream end of the pool being examined. The snorkelers will move slowly upstream as a group, identifying species by size class, and counting fishes only as they are encountered passing between biologists or between a biologist and the bank. The group will proceed at the pace of the slowest member (usually the biologist encountering the most fishes). When necessary, snorkelers will utilize underwater lights to illuminate any available cover where fishes may be either hiding or difficult to see. Surveys will end at the upstream end of each pool.

Annual backpack electrofishing surveys will be conducted within the upper portion of lower San Mateo Creek and San Mateo Creek upstream of Crystal Springs Reservoir to assess the status of and trends in fish community structure and spatial distribution, fish population abundances and age-class structures, and individual fitness. Four representative reaches downstream of the dam (two upstream and two downstream of the Polhemus Creek confluence) and two upstream of the reservoir will be surveyed one time during September or October prior to the first rainfall event of the year.

Discrete habitat types are not expected to present at all times in sufficient stream lengths to survey habitat types independently of one another. Consequently, in those instances, each representative reach will consist of two or more habitat types. Reaches will be isolated with block-nets and sampled using established multiple-pass electrofishing techniques.

Upon arrival at each sampling station, habitat types will be isolated with 3/8-inch mesh block-nets. Care will be taken to not walk in the selected creek reaches prior to deploying the nets.

Each habitat type will be sampled using multiple-pass electrofishing techniques. Depending on the size and complexity of the habitat type, one or two teams of Natural Resources and Lands Management Division biologists and volunteers will make a series of three or more passes from the downstream block-net to the upstream net. Teams will typically consist of four people; one "shocker" with backpack electrofisher unit, two "netters" and one "bucket handler." Team members will keep the same job for all passes through specific habitat types. Sediments stirred up by the crew(s) will be allowed to settle for a reasonable amount of time between passes. Fishes captured will be transported by bucket outside of the habitat being surveyed and either processed immediately or held in live-cars for later processing.

When making a pass through a habitat type, team members will slowly move upstream, working from side to side to cover the entire area. Netters will capture the bulk of the stunned fishes attracted to the anode of the electrofisher and transfer them to a bucket, while the bucket handler will attempt to capture fishes entering the field near the trailing cathode. On subsequent passes through a habitat type, team members will attempt to follow the same paths and perform the same actions that were done during the first pass in an effort to keep catch efficiencies equal between passes.

At the end of each pass, all captured fishes will be identified to species and measured (fork length or total length for fishes without forked tails). Several individuals from each species will be weighed. Scale (from directly below the dorsal fin) and tissue (caudal fin clip) samples will be collected from all steelhead and resident rainbow trout. Fishes will be held after processing in a habitat-specific live-car while additional electrofishing passes are conducted. Once sampling is complete in a specific habitat, all processed fishes from that habitat will be returned to the area where they were caught.

Conservation Measure 8: Restrict Valve Exercising to the Winter Season

~~To avoid and minimize potential stranding and displacement of fry and juvenile steelhead, and redd scour, SFPUC will restrict valve exercising, which results in the release of a large quantity of water over a short duration, to the winter period unless otherwise required by DSOD. When required by DSOD, valve exercising will be timed to coincide with natural runoff events to the extent practical and be done when it would not present any additional risk to flooding downstream. In addition to avoiding and minimizing the potential for adverse effects on steelhead associated with these releases, SFPUC also will avoid or minimize potential adverse effects on special-status amphibians (e.g., California red-legged frog).~~

~~Valve maintenance at the dissipation structure outside of the winter season would only be allowed if any associated water discharges could be contained within the dissipation structure (i.e., not released to San Mateo Creek). The water then could be pumped out of the dissipation structure at 0.66 cfs or less and balanced with the release from the low-flow valve such that the combined total discharge to the creek would be no more than 0.66 cfs. (unless otherwise permitted by regulatory agencies).~~

Conservation Measure 8: Restrict Required Valve Exercising to the Early Winter Season

The DWR/DSOD regularly requires the SFPUC to exercise valves to ensure the ability of the existing infrastructure to make high flow releases to protect the integrity of the dam. In order to avoid and minimize potential negative effects of this required valve testing (e.g., stranding and displacement of fry and juvenile steelhead, redd scour, displacement and/or scour of California red-legged frog juveniles and egg masses, respectively, etc), the SFPUC will restrict valve exercising to the early winter period (i.e., December), unless otherwise unavoidable as required by DWR/DSOD.

To the extent practicable, required valve exercising will be timed to coincide with natural runoff events and be implemented to not create any additional risk to flooding downstream (up to 600 cfs, as downstream conditions allow). While the existing natural high flow events (based on precipitation on the watersheds below the dam) create adequate migration conditions for adult and juvenile *O. mykiss* in San Mateo Creek, it appears these events are not mobilizing spawning gravels, flushing fine sediments from the system, or providing flows sufficient for the channel to shape itself and create habitat complexity. This issue will be further assessed in the habitat enhancement plan (see Conservation Measure 10 below), and to the extent practicable these required valve exercises may be used to create high flow conditions (of sufficient frequency, magnitude and duration) to better shape and sustain suitable salmonid habitat conditions below the dam, while not creating any additional risk of flooding downstream (up to 600 cfs, as downstream conditions allow).

Conservation Measure 10: Off-Site Compensation

~~In order to address the effects that the existing baseline conditions of the Lower Crystal Springs Dam have on *O. mykiss* and the limiting factors the dam places on the future~~

survival and recovery of the species due to a loss of habitat above the dam, the SFPUC will contribute funds towards an *O. mykiss* passage project in the San Francisco Bay area. The SFPUC proposes to provide funding to the City of Menlo Park for implementation of the Bonde Weir Ladder Project on San Francisquito Creek, to San Mateo County Parks toward implementation of the Memorial Park Sequoia Flat and Swim Dam Removal Projects on Pescadero Creek, or another project as agreed upon with NMFS during Section 7 consultation. The Bonde Weir and Memorial Park Projects would facilitate steelhead passage to 40 and 60 miles of upstream steelhead habitat, respectively.

Conservation Measure 10: Habitat Enhancement in Lower San Mateo Creek

Field investigations completed by the SFPUC and NMFS/DFG that led to the agreed upon minimum water release schedule, targeting the enhancement of *O. mykiss* in lower San Mateo Creek (see addendum to Conservation Measure 11), confirm that Lower Crystal Springs Dam has resulted in a channel that is coarse-sediment starved, highly embedded, and lacking in physical complexity. The SFPUC will develop and implement a habitat enhancement plan for the approximately 4,000-foot reach below Lower Crystal Springs Dam owned by the SFPUC, including the addition of spawning gravels, the construction of in-channel features that will improve and diversify existing rearing habitat conditions for juvenile *O. mykiss*, and the enhancement of riparian vegetation conditions (may include the removal of vegetation in overgrown areas). This habitat enhancement plan will be developed within the context of the agreed upon minimum water release schedule to further optimize habitat conditions for native fishes.

The habitat enhancement plan will be developed by the SFPUC with input from NMFS and DFG no later than December 2011, and then implemented by December 2012. All of this work will be funded by the SFPUC.

APPENDIX C&R D

LCSDI Variant – Proposed Future Operations

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SAN FRANCISCO PUBLIC UTILITIES COMMISSION

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July 29, 2010

To: Harlan Kelly, Assistant General Manager, Infrastructure Division
Julie Labonte, Water System Improvement Program Director

Thru: Michael Carlin, Deputy General Manager

From: Steven R. Ritchie, Assistant General Manager, Water Enterprise 

Re: Operations of Crystal Springs Reservoir Before and After Lower Crystal Springs Dam Improvements Project and Minimum Water Release Requirement for San Mateo Creek

GAVIN NEWSOM
MAYOR

F.X. CROWLEY
PRESIDENT

FRANCESCA VIETOR
VICE PRESIDENT

ANN MOLLER CAEN
COMMISSIONER

JULIET ELLIS
COMMISSIONER

ANSON B. MORAN
COMMISSIONER

ED HARRINGTON
GENERAL MANAGER

This memorandum describes current operations of Lower Crystal Springs Dam (LCSD) and Crystal Springs Reservoir and proposed future operations of the dam and reservoir once the LCSD Improvements project is in place. It describes the anticipated minimum water release schedule for San Mateo Creek as negotiated with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG), and that will be considered in the environmental review of the LCSD Improvements and Crystal Springs/San Andreas (CSSA) Transmission Upgrade projects. The memorandum also explains the proposed future long-term operating protocols and proposed interim operating protocols for a three-year period after construction is complete. The proposed future long-term operating protocols would not be fully implemented until three years after completion of all improvements to the dam in order to reduce environmental impacts. This memorandum supersedes the September 16, 2009 memorandum from David Briggs to Anna Roche.

CURRENT OPERATIONS

Reservoir Management

To maximize the reliability of water deliveries to its customers, the Water Enterprise operates the regional system to keep the local reservoirs, including Crystal Springs Reservoir, as full as possible while utilizing local watershed sources for deliveries as much as possible. The more water that the SFPUC can store locally, the less vulnerable it is to water shortages during dry periods and emergencies. Full local reservoirs also minimize the need for replenishment following droughts and during maintenance and conveyance system outages, and help to sustain water supply during the summer/early fall high demand period.

Crystal Springs Reservoir receives inflow from two sources: the Hetch Hetchy Aqueduct at the Pulgas overflow channel and local runoff from the San Mateo, Laguna, and Pilarcitos Creek watersheds.

The historical maximum operating water elevation of Crystal Springs Reservoir is 291.8 feet (NGVD)¹, but beginning in 1983, the SFPUC has been required by the California Department of Water Resources, Division of Safety of Dams (DSOD) to lower the maximum normal operating level to 283.8 feet due to concerns regarding the ability of LCSD to withstand the Probable Maximum Flood. The SFPUC currently operates Crystal Springs Reservoir seasonally as follows:

- The SFPUC aims to fill Crystal Springs Reservoir as full as possible without exceeding the maximum normal operating water surface elevation of 283.8 feet by the end of the rainy season (mid to late spring) and without releasing water to San Mateo Creek.
- During the summer and fall, Crystal Springs Reservoir is drawn down as a result of high water demand in the Bay Area.
- During the winter, the SFPUC keeps storage in Crystal Springs Reservoir about 2 billion gallons below the maximum normal storage capacity. Maintenance of this winter flood reservation enables the SFPUC to capture local runoff and prevent flooding below LCSD.
- As the rainy season ends, the SFPUC supplies Crystal Springs Reservoir as necessary using water from the Hetch Hetchy Aqueduct to reach target storage levels.

The SFPUC is able to raise the water level in Crystal Springs Reservoir above the spillway elevation of 283.8 feet by installing stoplogs in the spillway, subject to approval by the DSOD. The SFPUC has raised the water surface elevation above 283.8 feet nine times since 1982. The purpose of these episodes is to enable the SFPUC to capture and use runoff from late winter storms.

Releases to San Mateo Creek

The SFPUC is currently not releasing water from LCSD. Seepage around and under the dam and leakage from pipes results in a flow of about 0.6 cfs in San Mateo Creek immediately below the dam but this is inadvertent and not a deliberate release. Although avoidance of releases or spills of water to San Mateo Creek is currently one of the SFPUC's management goals for Crystal Springs Reservoir, releases and spills occur periodically. Controlled releases from the reservoir can be made through valves at LCSD. Uncontrolled spills occur over the dam spillway.

There are two circumstances in which controlled releases occur: reservoir management releases and emergency releases. Reservoir management releases are made when an unexpectedly large storm causes the water surface elevation in the reservoir to rise higher than desired. The SFPUC may choose to lower the water

¹ All elevations used in this memorandum are referenced with respect to the National Geodetic Vertical Datum of 1929 (NGVD or NGVD 29).

surface elevation by releasing water through the valves at the dam. The maximum release rate is 600 cfs. Three or four controlled releases for reservoir management purposes have occurred in the last 25 years.

Emergency releases occur when the rate of local inflow is predicted to imminently reach the spillway and become an uncontrolled release. Under these conditions the SFPUC can release water through the valves at the dam at a sustained rate of 800 cfs and at 1,000 cfs for short periods of time. No emergency releases have been made in the last 25 years.

Uncontrolled releases occur when the water surface elevation in the reservoir cannot be kept below the spillway crest elevation by controlled releases to San Mateo Creek and pumping of water to San Andreas Reservoir. Uncontrolled releases only occur during very large and unexpected storms; none have occurred in the last 25 years.

FUTURE OPERATIONS

Reservoir Management

With the LCSD Improvements in place, the SFPUC would operate Crystal Springs Reservoir much as it does currently. The SFPUC would keep the reservoir as full as possible and the seasonal pattern of operations would remain the same. However, the maximum normal water surface elevation would be 287.8 feet, four feet higher than the current value, increasing the average annual storage in the reservoir.

As it does currently, the SFPUC would allow the water surface elevation to exceed the maximum normal water surface elevation occasionally. Water surface elevations would exceed 287.8 feet for short durations (up to 14 days) and up to elevation 291.8 feet during the rainy season (defined as November through April). Such exceedances would be expected to occur about one year in three and no more than 2 to 3 times in a single year. Exceedances could occur any time in the rainy season but would primarily occur after March 1 when the SFPUC begins eliminating the winter flood reservation as the rainy season ends.

In extreme and unlikely circumstances, such as a precipitation event that is more severe than a 50-year, 6-hour event, particularly when the winter flood reservation is not in place, it is possible that the maximum target elevation of 287.8 feet may be exceeded for longer periods depending on the magnitude and duration of the events and the reservoir levels prior to the event. In these extreme circumstances, exceedances above 287.8 feet would be evacuated immediately by:

- Reducing or stopping inflow to Crystal Springs Reservoir from the Hetch Hetchy Aqueduct;

- Pumping up to 120 million gallons per day (mgd) of water from Crystal Springs Reservoir to San Andreas Reservoir², if capacity is available in the latter, and/or;
- Discharging up to 600 cubic feet per second to San Mateo Creek as downstream conditions allow using pipelines and valves at LCSD.

Releases to San Mateo Creek

As part of the LCSD Improvements and the CSSA Transmission Upgrade projects, the Water Enterprise worked with NMFS and CDFG to develop a minimum water release schedule to enhance habitat in San Mateo Creek below LCSD for Central California Coast steelhead and other native species. The water release schedule supplements and/or supersedes related descriptions in the LCSD-CSSA NMFS Biological Assessment (December 2009).

To better understand watershed hydrologic conditions, a water-year classification system was developed based upon monthly cumulative precipitation indices over 91 years of record (1919 – 2009). The precipitation index was calculated by averaging precipitation at four SFPUC gages: Davis Tunnel, San Andreas Dam, LCSD and Upper Crystal Springs. The gages are spread throughout the San Mateo Creek Watershed in order to represent spatial variations in precipitation. Precipitation was chosen because no long-term stream flow record exists for the San Mateo Creek Watershed. The precipitation index has sufficient accuracy to discriminate between water-year types and is relatively easy to monitor.

Cumulative monthly precipitation index values were ranked by exceedance probabilities (percentage of time that the index is equal to or greater than a certain index value throughout the period of record). Water years were divided into two classes to establish “normal/wet” – Schedule A (<60% exceedance probability) and “dry” –Schedule B (≥60% exceedance probability).

After the completion of the LCSD Improvements and CSSA Transmission Upgrade projects, the SFPUC would provide releases in accordance with the schedule shown in Table 1. Each water year begins October 1st and ends September 30th. The cumulative monthly precipitation index is used to decide between schedules A or B on January 12 of each water year. Once in a schedule, there is no change of schedule until the next January 12.

² Limited to 75 mgd until Crystal Springs Pump Station is re-built in 2012.

Table 1. Summary of San Mateo Creek minimum water release schedules below LCSD.

Flow schedule decision date	Flow schedule application period	Dry (Schedule B)			Normal/Wet (Schedule A)		
		Cumulated precipitation index for water-year classification (in) ¹	Flow ramping schedule (cfs)	Flow requirement (cfs)	Cumulated precipitation index for water-year classification (in)	Flow ramping schedule (cfs)	Flow requirement (cfs)
N/A	Oct 1 – Dec 14	N/A	N/A	3	N/A	N/A	3
N/A	Dec 15 – Jan 12	N/A	N/A	5	N/A	N/A	5
Jan 12 ²	Jan. 15 – Mar 15	≤ 10.3	Jan 13: 5 Jan 14: 7	10	> 10.3	Jan 13: 7 Jan 14: 12	17
N/A	Mar 16 – Mar 30	N/A	N/A	8	N/A	Mar 16-17: 15 Mar 18-19: 12	10
N/A	Mar 31 – Apr 30	N/A	N/A	5	N/A	Mar 31- Apr 1: 7	5
N/A	May 1 – Sep 30	N/A	N/A	3	N/A	N/A	3

Notes:

¹ San Mateo Creek precipitation index is the average of daily rainfall measured at four SFPUC gages: Davis Tunnel, San Andreas Dam, LCSD and Upper Crystal Springs.

² The decision on Jan 12 is based on cumulated precipitation index to Jan 11.

³ If runoff from watersheds below LCSD is creating unacceptable flooding conditions during precipitation events, the SFPUC may vary from the minimum flow requirements to not exacerbate this flood risk. In these rare situations, varying from this schedule would not result in anything less than the minimum flow conditions in the reach between LCSD and the USGS gage on lower San Mateo Creek, which would be the compliance location for the minimum flow requirements.

The compliance location for the instream flows would be at the existing USGS gage below LCSD (USGS 11162753). Flows below LCSD would be released from a proposed low-flow valve constructed as part of the CSSA Transmission Upgrade project. The other existing valves would be modified or supplemented to enable a higher rate of release in an emergency.

Controlled reservoir management releases would be made through the valves at the dam at the same maximum rate as occurs currently, 600 cfs. When a 600 cfs reservoir management release is occurring, minimum instream flow requirements would be

released through the low flow valve and the balance would be released through the other valves. The total magnitude and frequency of controlled releases would be the same or similar to current controlled releases. Controlled emergency releases, should they ever be needed, would be made at a maximum sustained rate of 1,200 cfs once CSSA Transmission Upgrade Project is complete.

INTERIM OPERATIONS

Reservoir Management

During the first three years after completion of the LCSD Improvements project, operations would differ from typical long-term future operations in order to reduce impacts to the California red-legged frog and the San Francisco garter snake, two special status species that are present around the perimeter of the reservoir. To allow sufficient time for these species to adapt to the four-foot increase in maximum normal operating water levels, the SFPUC will gradually increase the water elevations in the reservoir over a period of no less than three years. The maximum normal water surface elevation for the reservoir will increase by one foot each year following an initial increase of one foot to 284.8 feet on the first April 15 following substantial completion. The following year on April 15, the maximum normal water surface elevation for the reservoir will be 285.8 feet. The following year on April 15 the maximum normal water surface elevation for the reservoir will be 286.8 feet. Finally, no less than three years following substantial completion, the maximum normal water surface elevation for the reservoir will become 287.8 feet, its long-term value. During this no-less-than three year period, the SFPUC will avoid exceedances of the applicable maximum normal water surface elevation. The winter flood reservation will be kept in place later in the spring during the three-year period of interim operations than it would be under the future long-term operating protocols to reduce the risk of a late winter/early spring exceedance of the maximum normal water surface elevation.

Releases to San Mateo Creek

The SFPUC would make releases from Crystal Springs Reservoir to support native fishes and other aquatic life in accordance with the schedule shown in Table 1 during interim operations. Controlled or uncontrolled releases in the period of interim operations, if necessary, would be the same as controlled or uncontrolled releases under future operational conditions.

Please contact Dave Briggs at (650) 872-5901 or at dbriggs@sfwater.org for any questions related to the operation of Crystal Springs Reservoir. Please contact Tim Ramirez at (415) 554-3265 or at tramirez@sfwater.org if you have any questions or comments regarding the proposed flow release schedule described above.

cc: Ellen Levin
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